BONNEVILLE POWER ADMINISTRATION

TRANSMISSION BUSINESS LINE

2002 TRANSMISSION REVENUE REQUIREMENTS STUDY

March, 2000

TR-02-E-BPA-01

2002 TRANSMISSION REVENUE REQUIREMENTS STUDY
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COMMONLY USED ACRONYMS

AC	Alternating Current
ACS	Ancillary Services and Control Area Services (Rate)
AF	Advance Funding (Rate)
AFUDC	Allowance for Funds Used During Construction
AGC	Automatic Generation Control
aMW	Average Megawatt
ASC	Average System Cost
BOR	U.S. Bureau of Reclamation
BPA	Bonneville Power Administration
Btu	British Thermal Unit
CA	Control Area
CAISO	California Independent System Operator
California PX	California Power Exchange
CAS	Control Area Service
COB	California-Oregon Border
COE	U.S. Army Corps of Engineers
CPTC	Columbia Power Trades Council
CRAC	Cost Recovery Adjustment Clause
CSL	Customer-Served Load
CY	Calendar Year (Jan-Dec)
DC	Direct Current
DOE	Department of Energy
DOI	Department of Interior
DSIs	Direct Service Industrial Customers
EIA	Energy Information Administration
Energy Northwest	Formerly Washington Public Power Supply System Project
F&O	Financial and Operating Reports
FCCF	Fish Cost Contingency Fund
FCRPS	Federal Columbia River Power System
FCRTS	Federal Columbia River Transmission System
FERC	Federal Energy Regulatory Commission
FPT	Formula Power Transmission Rate
FTE	Full-time Equivalent
FY	Fiscal Year (Oct-Sep)
GDP	Gross Domestic Product
GI	Generation Integration
GRSPs	General Rate Schedule Provisions
GSU	Generator Step-Up Transformers
GTA	General Transfer Agreement
GWh	Gigawatthour
HLH	Heavy Load Hours
HNF	Hourly Non-Firm
IDC	Interest During Construction

IE	Eastern Intertie (Rate)
IM	Montana Intertie (Rate)
IOUs	Investor-Owned Utilities
IP	Industrial Firm Power (Rate)
IR	Integration of Resources (Rate)
IS	Southern Intertie (Rate)
ISC	Investment Service Coverage
ISO	Independent System Operator
kcfs	kilo (thousands) of cubic feet per second
kV	Kilovolt (1000 volts)
kVAr	Kilovoltampere Reactive
kW	Kilowatt (1000 watts)
kWh	Kilowatthour
LLH	Light Load Hours
m/kWh	Mills per kilowatthour
MAF	Million Acre Feet
MORC	Minimum Operating Reliability Criteria
MTPL	Monthly Transmission Peak Load
MW	Megawatt (1 million watts)
MWh	Megawatthour
NCD	Network Contract Demand (Service and Rate)
NERC	North American Electric Reliability Council
NF	Nonfirm Energy
NOB	Nevada-Oregon Border
NORM	Non-Operating Risk Model
Northwest Power Act	Pacific Northwest Electric Power Planning and Conservation Act
NT	Network Integration Transmission (Service and Rate)
NTSA	Non-Treaty Storage Agreement
NWPP	Northwest Power Pool
NWPPC	Northwest Power Planning Council
O&M	Operation and Maintenance
OASIS	Open Access Same-Time Information System
OATT	Open Access Transmission Tariff
OMB	Office of Management and Budget
OY	Operating Year (Aug-Jul)
PA	Public Agency
PBL	Power Business Line
PNCA	Pacific Northwest Coordination Agreement
PNRR	Planned Net Revenues for Risk
PNUCC	Pacific Northwest Utilities Conference Committee
PNW	Pacific Northwest
POD	Point of Delivery
POI	Point of Integration (or, Interconnection)
POR	Point of Receipt
PSW	Pacific Southwest
PTP	Point to Point (Service and Rate)

PUD	Public or People's Utility District
Reclamation	Bureau of Reclamation
RiskMod	Risk Analysis Model (computer model)
RiskSim	Risk Simulation Model
RMS	Remote Metering System
ROD	Record of Decision
RPSA	Residential Purchase Sale Agreement
RRS	Revenue Requirement Study
RTO	Regional Transmission Organization
SCADA	Supervisory Control And Data Acquisition System
Tariff	Open Access Transmission Tariff
TBL	Transmission Business Line
TCH	Transmission Contract Holder
TGT	Townsend-Garrison Transmission (Rate)
TPP	Treasury Payment Probability
TRAP	Transmission Risk Analysis Processor
TRS	Transmission Rate Study
TTSL	Total Transmission System Loading
UIC	Unauthorized Increase Charge
UFT	Use of Facilities (Rate)
USBOR	U.S. Bureau of Reclamation
VOR	Value of Reserves
WEFA	Wharton Econometric Forecasting Associates
WSCC	Western Systems Coordinating Council
WSPP	Western System Power Pool
1CP	One Coincidental Peak
12CP	Twelve Coincidental Peak

1. INTRODUCTION

1.1 Purpose and Development of the Transmission Revenue Requirement Study

The purpose of the Transmission Revenue Requirement Study (Study) is to establish the level of revenues needed from rates for transmission and ancillary services to recover, in accordance with sound business principles, costs associated with the transmission of electric power over the Federal Columbia River Transmission System (FCRTS). The transmission revenue requirements herein include: recovery of the Federal investment in transmission and transmission-related assets; the operations and maintenance (O&M) and other annual expenses associated with transmission and ancillary services; the cost of generation inputs for ancillary services and other interbusiness-line services necessary for the transmission of power; planned net revenues for risk, and all other transmission-related costs incurred by the Administrator.

The cost evaluation period for this rate proposal includes Fiscal Years (FY) 1999 - 2003, the period extending from the last year for which historical information is available through the proposed rate test period. The Study is based on transmission revenue requirements for the rate test period FY 2002 – 2003, including the results of transmission repayment studies. This Study does ***not*** include revenue requirements or a cost recovery demonstration for the Bonneville Power Administration's (BPA) generation function. BPA's generation revenue requirements were developed in a separate rate proceeding to establish BPA's wholesale power rates, beginning on August 24, 1999.

This Study outlines the policies, forecasts, assumptions, and calculations used to determine BPA's transmission revenue requirements. Legal requirements are summarized in Chapter 5 of this Study. The Documentation for the Initial Revenue Requirement Study (Documentation)

contains key technical assumptions and calculations, the results of the transmission repayment studies, and a further explanation of the repayment program and its outputs. The Documentation appears in TR-02-E-BPA-01A

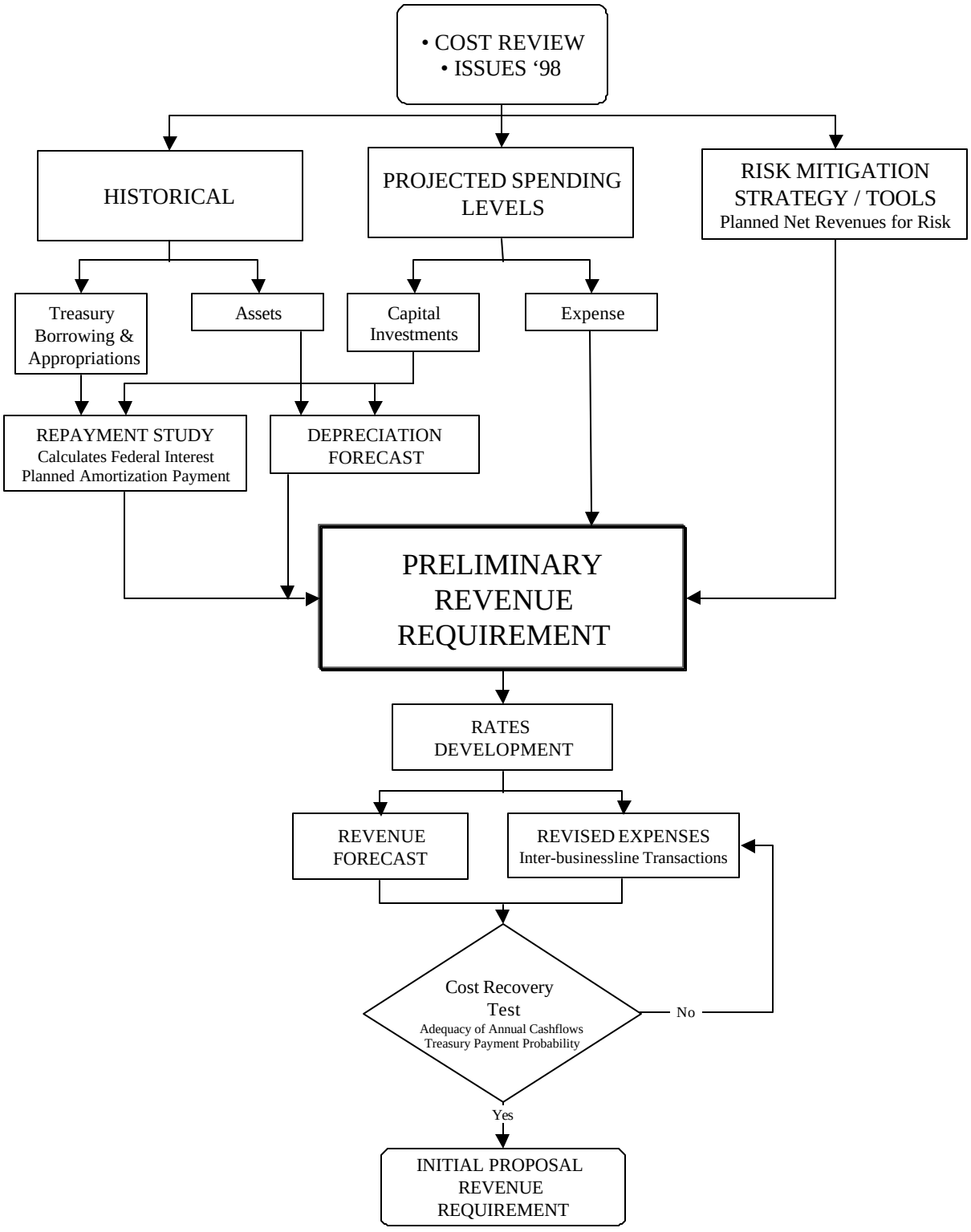
The revenue requirements that appear in this Study are developed using a cost accounting analysis comprised of three parts. First, repayment studies for the transmission function are prepared to determine the amortization schedule and to project annual interest expense for bonds and appropriations that fund the Federal investment in transmission and transmission-related assets. Repayment studies are conducted for each year of the rate test period, and cover a 35-year repayment period. Second, transmission operating expenses and minimum required net revenues (if needed) are projected for each year of the rate test period. Third, annual planned net revenues for risk are determined taking into account risks, BPA's cost recovery goals, and risk mitigation measures. From these three steps, revenue requirements are set at the revenue level necessary to fulfill BPA's cost recovery requirements and objectives. See Figure 1.1, Transmission Revenue Requirement Process.

BPA conducts a current revenue test to determine whether revenues projected from current rates meet its cost recovery requirements and objectives for the rate test and repayment period. If the current revenue test indicates that cost recovery and risk mitigation requirements can be met, current rates could be extended. The current revenue test, contained in Chapter 4.2 of this study, demonstrates that current revenues are insufficient to meet cost recovery requirements and objectives for the rate test period and the repayment period.

Consistent with RA 6120.2 and the FERC rate review standards applicable to BPA, BPA must demonstrate the adequacy of the proposed rates to recover its costs. The revised revenue test determines whether projected revenues from proposed rates will meet cost recovery requirements

FIGURE 1.1

TRANSMISSION REVENUE REQUIREMENT PROCESS



and objectives for the rate test and repayment period. The revised revenue test, contained in Chapter 4.3 of this Study, demonstrates that revenues from the proposed transmission and ancillary services rates will recover transmission costs in each year of the rate test period and over the ensuing 35-year repayment period. Consistent with the Treasury payment probability (TPP) standard that was adopted as a long-term policy in 1993, the costs are projected to be recovered through the transmission and ancillary services rates with a 95 percent probability that associated United States (U.S.) Treasury payments will be made on time and in full over the two-year rate period. See Chapter 2.2 of this Study.

Table 1.1 summarizes the revised revenue test and shows projected net revenues from proposed rates over the two-year rate period. In combination with other risk mitigation tools, these net revenues are set at the lowest level necessary to achieve BPA's cost recovery objectives in the face of transmission-related risks.

Table 1.1

PROJECTED NET REVENUES FROM PROPOSED RATES
($000s)

Fiscal Year		Transmission
2002	Projected Revenues From Proposed Rates	$696,886
	Projected Expenses	$688,176
	Net Revenues	**$8,710**
2003	Projected Revenues From Proposed Rates	$703,201
	Projected Expenses	$690,966
	Net Revenues	**$12,235**
Average FYs 2002-2003	**Projected Revenues From Proposed Rates**	**$700,044**
	Projected Expenses	**$689,571**
	Net Revenues	**$10,473**

The TPP for the two year rate period is 95%.

Table 1.2 shows planned transmission repayments to the U.S. Treasury during the rate test period.

Table 1.2

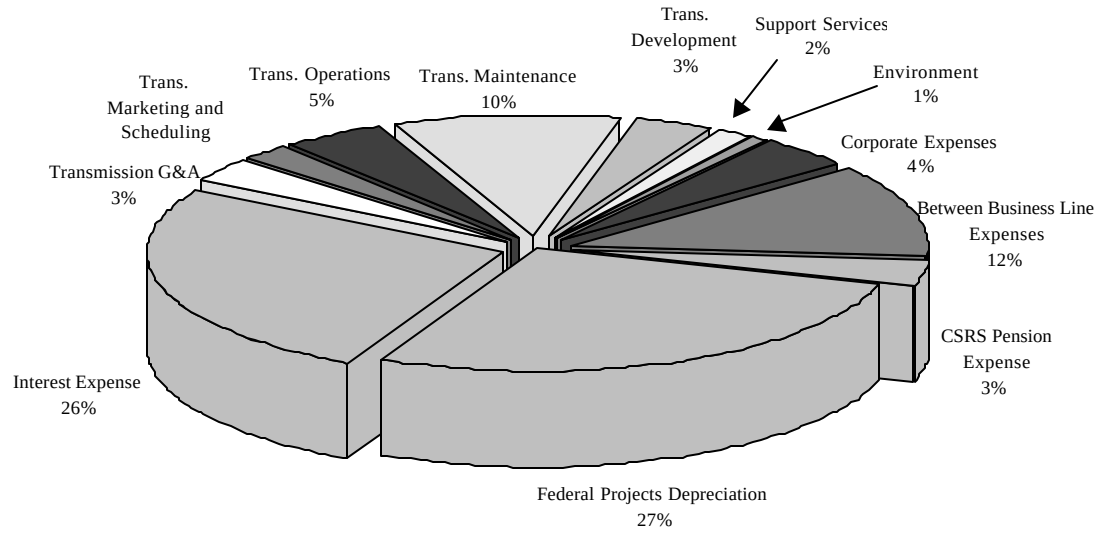
PLANNED REPAYMENTS TO U.S. TREASURY
FYs 2002 – 2003 TRANSMISSION REPAYMENT STUDIES
($000s)

Fiscal Year	Annual Amortization
2002	$148,139
2003	$150,480
Total	$298,619

The transmission operating expenses for FY 2002-2003 included in this proposed revenue requirement appear in Figure 1.2.

FIGURE 1.2

Composition of Transmission Operating & Interest Expenses
FY 2002-2003 Average



($ in millions)

	FY 2002	FY 2003	Average	
Transmission G&A	$ 22.2	$ 23.8	$ 23.0	3%
Transmission Marketing and Scheduling	$ 15.2	$ 15.7	$ 15.5	2%
Transmission System Operations	$ 31.0	$ 32.1	$ 31.6	5%
Transmission System Maintenance	$ 71.3	$ 73.4	$ 72.4	10%
Transmission System Development	$ 23.7	$ 23.9	$ 23.8	3%
Support Services	$ 11.9	$ 12.2	$ 12.1	2%
Environment	$ 5.1	$ 5.3	$ 5.2	1%
Corporate Expenses	$ 30.0	$ 28.1	$ 29.1	4%
Between Business Line Expenses	$ 84.3	$ 84.2	$ 84.3	12%
CSRS Pension Expense	$ 27.6	$ 17.6	$ 22.6	3%
Federal Projects Depreciation	$182.7	$195.4	$ 189.1	27%
Interest Expense	$182.9	$178.9	$ 180.9	26%
Total Transmission Expenses	**$ 687.9**	**$ 690.6**	**$ 689.3**	**100%**

1.2 Public Involvement Processes

BPA has been the focus of and/or has conducted several regional public processes that have had, and will continue to have, significant impacts on its methods and costs of doing business. In 1998, BPA worked with the Northwest Power Planning Council (NWPPC) in the Cost Review of the Federal Columbia River Power System. BPA outlined its plans to implement the Cost

Review recommendations in a subsequent public process entitled Issues '98. Even though the Issues '98 forum primarily focused on BPA's power costs, BPA committed to ensuring that its transmission costs would be as low as possible consistent with sound business practices.

Concurrent with, but independent of preparing this initial rate proposal, BPA also conducted a public process to ask customers and constituents for their thoughts about planned capital spending and the expenses associated with supporting a reliable and safe transmission system. These meetings, held throughout the region between November 1999 and February 2000, specifically explored customer and constituent views on:

- Maintaining system reliability commensurate with national and regional guidelines;
- Meeting local load growth;
- Improving areas where the transmission system is constrained;
- Upgrading communications systems with fiber optics;
- Replacing aging equipment; and
- Succession planning for the aging workforce, specifically in critical positions.

The customer and constituent views expressed during this public process have not been incorporated in the revenue requirements of this initial transmission rate proposal. BPA will close out the public process with decisions by the Administrator on transmission capital and expense levels. The Administrator's decisions will consider comments received during the public process. Further, BPA remains open to discussions of spending plans. Re-examination of spending levels, if any, will occur outside of the rate proceeding. The Administrator's decisions, and consideration of subsequent comments received outside the rate proceeding, will be reflected in the revenue requirements, including repayment studies, in the final rate proposal. *See* Chapter 2 of this Study for a chronology of the spending level development process.

2. SPENDING LEVEL DEVELOPMENT AND FINANCIAL POLICY

2.1 Development Process for Spending Levels

Development of spending levels reflected in these revenue requirements began with the Comprehensive Review of the Northwest Energy Systems (Comprehensive Review), which the governors of Idaho, Montana, Oregon, and Washington initiated in 1996 to seize opportunities and moderate risks presented by the transition of the region's transmission and power systems to a more competitive market. The Comprehensive Review recognized that this transition raised fundamental issues for transmission, such as ensuring reliable service, minimizing cost shifts and not increasing risk of repayment of the Federal investment to Treasury.

A theme of the Comprehensive Review was that BPA and the other entities of the Federal Columbia River Power System (FCRPS) must effectively manage and control costs. Specifically, the Comprehensive Review recommended that BPA promote the broadest possible bulk power market competition through (1) functional separation of BPA's transmission operations from its power marketing function, (2) providing open access transmission service without increasing repayment risk for the U.S. Treasury and (3) retaining the substantial long-term benefits of the FCRPS for the Northwest. In addition, the Comprehensive Review recognized that business line separation and open access transmission service consistent with FERC directives would bring increased cost pressures on transmission as it became responsible for some generation costs.

An outgrowth of the Comprehensive Review was the Cost Review of the FCRPS (Cost Review) referred to in Chapter 1 of this Study. In September 1997, BPA and the NWPPC jointly launched a review of FCRPS costs. The objectives of the Cost Review were to ensure that

BPA's long-term power and transmission costs would be as low as possible, consistent with sound business practices. The intent of the Cost Review relating to transmission issues was to:

1. Give confidence to BPA customers, tribes, and constituents that FCRPS costs would be managed effectively;
2. Minimize, if not avoid, transition (stranded) costs; and
3. Ensure that obligations to the U.S. Treasury and third-party bondholders would remain at least as secure as they were in 1998.

The Cost Review drew on the expertise of five executives with experience in managing large organizations undergoing competitive transitions. A draft of the panel's recommendations was submitted to a month-long regional public comment process, which included two broadly attended public meetings. In addition, there were briefings of other groups throughout the region, including tribal, public power and environmental interests. The draft recommendations were modified to take into account comments received, and then submitted to the Administrator, the region's Governors, the Northwest Congressional delegation, and the House and Senate Committees on Appropriations in March 1998.

In June 1998, BPA began a public involvement process entitled Issues '98. Issues '98 was designed to provide the region an overview and context for major policy issues surrounding BPA's future, including cost management and other Cost Review recommendations, and an opportunity to comment on the proposals. As with the Cost Review, Issues '98 focused primarily on Bonneville's power business line. In addition to taking written comment, three public meetings where held within the region to provide an opportunity for the public to participate. At the conclusion of the Issues '98 process, BPA completed and released the "Cost Review Implementation Plan." This document, published in October 1998, summarized the

thirteen recommendations of the Cost Review, the implementation plan, and relevant customer comments.

The transmission-related recommendations in the Cost Review and affirmed in Issues '98 were made to specific cost baselines that already included significant cost control initiatives, including:

- Holding the TBL O&M costs constant in nominal dollars;
- Reducing TBL and Corporate Federal and contractor FTE levels and administrative costs;
- Constraining Federal investments to levels commensurate with availability of low-cost sources of capital; and
- Redesigning information technology and accounting/financial reporting system and services to be more responsive and less costly.

For transmission, the Cost Review recommended that BPA: enhance transmission cost management through improved capital asset management; reduce administrative and internal services costs; and adjust and correct the functionalization and allocation of costs in accordance with FPA conformance. For the 2002-06 period transmission cost reductions were expected to be $1.5 million annual average through improved efficiencies, with an additional estimate of at least a $30 million cost shift from power to transmission for FPA conformance and reductions to general and administrative services costs provided by Corporate and Shared Services.

In the 1996 Rate Case, BPA originally proposed a 36 percent transmission rate increase to recover forecasted costs over the five-year rate period (FY1997-2001). As part of the global settlement of power and transmission issues, the transmission rate increase was limited to 13.5 percent for the five-year rate period. While that decision created no precedent, it had a significant impact upon BPA's transmission expense and capital programs for the 1996-2001 rate

period, and was the driver in the Cost Review and Issues ’98 targets of holding transmission expenses flat for FY 1998 through 2001. In an effort to implement these targets and stay within the cost levels outlined in the 1996 rate case for the FY1997-2001 rate period, the TBL implemented cost cuts, adopted efficiencies in its transmission operation and maintenance programs and deferred transmission system improvements. However, a number of factors have caused actual and forecasted expenses for the initial proposal to be greater than levels forecasted in the 1996 rate case, Cost Review, and Issues ’98. These factors include:

- Business line separation costs including the implementation of functional separation and separate systems for billing, scheduling, contracting and marketing.
- TBL’s obligation to fully fund payments to the Civil Services Retirement System (and additional $27.6 million in FY02 and $17.6 million in FY03), and negotiated wage and benefits increases for 50 percent of all TBL positions covered by the Columbia Power Trades Council (CPTC) Agreement;
- Planning for replacements of an aging TBL workforce, one-half of which is eligible to retire within five (5) years; and obtaining personnel to address higher and more complex uses of the system;
- As a result of functional unbundling, the costs of generation inputs for ancillary services are now the responsibility of the TBL. Portions of these costs, which are now higher than the Cost Review estimates, were previously bundled in the power rates; and
- Inflation on materials and services, and wage and benefits for General Schedule employees.

See Table 2.1.

Table 2.1

Comparison of 1997-2001 Averages for 1996 Final Rate Proposal, Issues '98, Current Estimates (1997-1999 Actuals plus 2000 –2001 Forecast), and 2002-2003 Initial Proposal

(Average Annual $ in millions)

Expenses	1996 Rate Case (1997-2001)1/	Issues '98 (FY1997-2001)	Current Actuals and Estimates (FY1997-01) 2/	Initial Proposal Revenue Requirement (FY2002-2003)	Cost Pressures impacting the Initial Proposal Revenue Requirement 3/
G&A	$3.4	$13.4	$18.2	$23.0	Due to an oversight, G&A was understated $12 million in 1996 Rate Case
Marketing and Scheduling	$7.2	$13.6	$13.3	$15.5	Scheduling, billing, and marketing increases are due, in large part, to separation.
System Operations	$25.4	$25.1	$27.1	$31.6	Increase due to stability reserves, WSCC requirements and succession planing.
System Maintenance	$58.5	$59.6	$64.2	$72.4	Personnel Compensation
System Development	$15.3	$10.7	$12.4	$23.8	GTA leases and new leases.
Environment	$8.4	$7.7	$5.5	$5.2	
Support Services	$3.7	$8.9	$9.9	$12.1	4/
Corporate & Shared Services	$37.0	$32.4	$34.5	$29.1	Consistent with Cost Review recommendation to reduce agency administrative and support services costs.
CSRS Expense	$0.0	$1.2	$2.0	$22.6	BPA agreement with OMB to repay unrecovered Civil Service Retirement Costs
Total System Operation & Maintenance	**$158.9**	**$172.6**	**$187.1**	**$235.3**	
Between Business Line Expenses	$40.8	$15.2	$33.7	$84.3	Increased costs for Generation Inputs for reserve services.
Total (excluding depreciation and interest)	**$199.7**	**$187.8**	**$220.8**	**$319.3** 5/	

1/ Adjusted for comparison purposes because the Final 1996 rate proposal did not anticipate impact of cost shifts for separation. In 1996 rate proposal, wheeling costs were functionalized to transmission, and "between business line expenses" were the portion of the transmission costs included in bundled power.
2/ Includes actual costs for 1997 through 1999 and forecast costs for 2000 - 2001.
3/ General increases in wages and benefits ($12 million) and inflation ($6 million) were significant cost pressures and are reflected in several cost categories.
4/ Increases in Shared Services due to reclassification of costs from System Operations and Maintenance
5/ Does not add due to rounding

BPA determines program spending levels separate from the rate process. BPA conducted numerous regional workshops, beginning in November 1999, to ask for customer input in a public forum entitled "Reliability and the Future of Transmission Costs." The process specifically solicited public comment on BPA's proposed FY 2002-2003 spending levels for transmission system operations. This forum also included a discussion with customers and constituents of capital spending levels and planned transmission system improvement, upgrade and reinforcement projects.

Specifically, TBL identified capital investments that are necessary to:

- meet increased wholesale transmission transactions, reliably serve load growth, provide reactive needs and new generation reinforcements and system replacements, alleviate constrained paths, and respond to changes in reliability criteria;
- invest in technology and personnel to address significantly higher and more complex uses of BPA's transmission system;
- meet the requirements for Business line separation including the implementation of separate systems for billing scheduling, contracting and marketing functions; and
- replace aging equipment and maintain the system in a safe, reliable, environmentally responsible, and cost-effective manner.

Notices of the workshops were widely distributed to TBL's customers and interested parties and were published on BPA's OASIS. Workshop participants were clearly informed that the outcome of this public process would be the basis for the revenue requirements used to set rates. Five public workshops were held in November 1999 and two in February 2000. Substantial oral and written comments were provided by workshop participants to clarify and examine BPA's planned transmission capital spending and expenses. Written comments on TBL's planned capital spending and expenses were formally accepted through February 25, 2000.

The revenue requirements documented in this Study reflect the preliminary capital investments and expenses outlined in this public process. As a result of comments received in the public process BPA may make additional changes to program spending levels. In addition, certain costs affecting the preliminary program spending levels are subject to change through the rate setting process. This includes costs associated with sources of capital investments, interest rate forecasts, scheduled amortization, forecasted depreciation, forecasts of system replacements for repayment studies, interest expense, and expense and revenue uncertainties and risks included in

the risk analysis. Also included are transmission GTA and inter-business line expenses that are decided in the power rate case. As a result, the costs associated with these items may be different than estimates shown in the public process.

The customer and constituent views expressed during the public process on spending levels have not been incorporated in the revenue requirements of this initial transmission rate proposal. BPA will close out the public process with decisions by the Administrator on transmission capital and expense levels. The Administrator's decisions will consider comments received during the public process. Further, BPA remains open to discussions of spending plans. Re-examination of the spending levels, if any, will occur outside the rate proceeding. The Administrator's decisions, and consideration of subsequent comments, will be reflected in the revenue requirements, including repayment studies, in the final rate proposal.

The scope of the separate rate proceeding for wholesale power rates includes:

- a methodology for functionalizing corporate overhead costs, and generation and transmission costs;
- unit costs for generation inputs for operating reserves and regulation ancillary services;
- the generation input cost for reactive supply and voltage control from generation resources;
- the power costs of station service and remedial action schemes; and
- the allocation of generation integration and generator step-up transformers to the power business line

BPA's power rate case proposal also includes a treatment of GTA costs and their replacement for the delivery of both Federal and non-Federal power. Final decisions on these issues will be

determined in the Power rate case, and will be reflected and implemented in the final transmission rate proposal.

2.2 Financial Risk and Mitigation

BPA adopted a long-term policy in its 1993 Final Rate Proposal which called for setting rates that build and maintain financial reserves sufficient for the agency to achieve a 95 percent probability of meeting U.S. Treasury payments in full and on time for each two-year rate period. *See* 1993 Final Rate Proposal, Administrator's Record of Decision, WP-93-A-02 at page 72. For further discussion of the TPP standard, see the Generation 2002 Initial Power Rate Proposal Revenue Requirement Study, WP-02-E-BPA-02, Chapter 2, Section 2.2, p. 18; Direct Testimony at WP-02-E-BPA-13, Section 4, p. 21; and Rebuttal Testimony at WP-02-E-BPA-39, Section 2, p. 2.

Since then, the Comprehensive Review (discussed in Section 2.1) highlighted the need for a high Treasury payment probability. The Comprehensive Review recommendations were developed with several goals in mind, one of these being to "ensure repayment of the debt to the U.S. Treasury with a greater probability than currently exists . . ." At the time of the Comprehensive Review, BPA's 1996 rates assumed an 80 percent probability of meeting Treasury payment in full and on time for the 5-year period.

In this rate proposal, BPA has, for the first time, analyzed its transmission risks and is proposing risk mitigation tools designed to achieve a 95 percent probability standard for the transmission function. This high probability satisfies the objectives of the 1993 decision and is in keeping with the Comprehensive Review recommendation of an improved probability of full repayment to the Treasury.

To achieve this Treasury payment probability (TPP), the following risk mitigation "tools" are included in the rate proposal:

1. Starting reserves: Starting financial reserves include cash in the BPA Fund and the deferred borrowing balance attributed to the transmission function. The risk-adjusted value for starting reserves is projected to total $26.9 million at the beginning of FY 2002.

2. Planned Net Revenues for Risk (PNRR). PNRR is a component of the revenue requirement that is added to annual expenses. PNRR adds to cash flows so that financial reserves are sufficient to mitigate short run volatility in costs and revenues and achieve the TPP goal.

3. Two Year Rate Period. BPA is proposing to adopt rates for a two-year rate period. The ability to revise rates after two years, or more frequently if need be, serves as an important risk mitigation tool for BPA's transmission function. The impact of a two year rate period is to limit the effects of uncertainty which must be mitigated by other risk mitigation tools to the period of time from the date of the initial proposal through FY 2003. Longer run risks are mitigated by the ability to change rate levels.

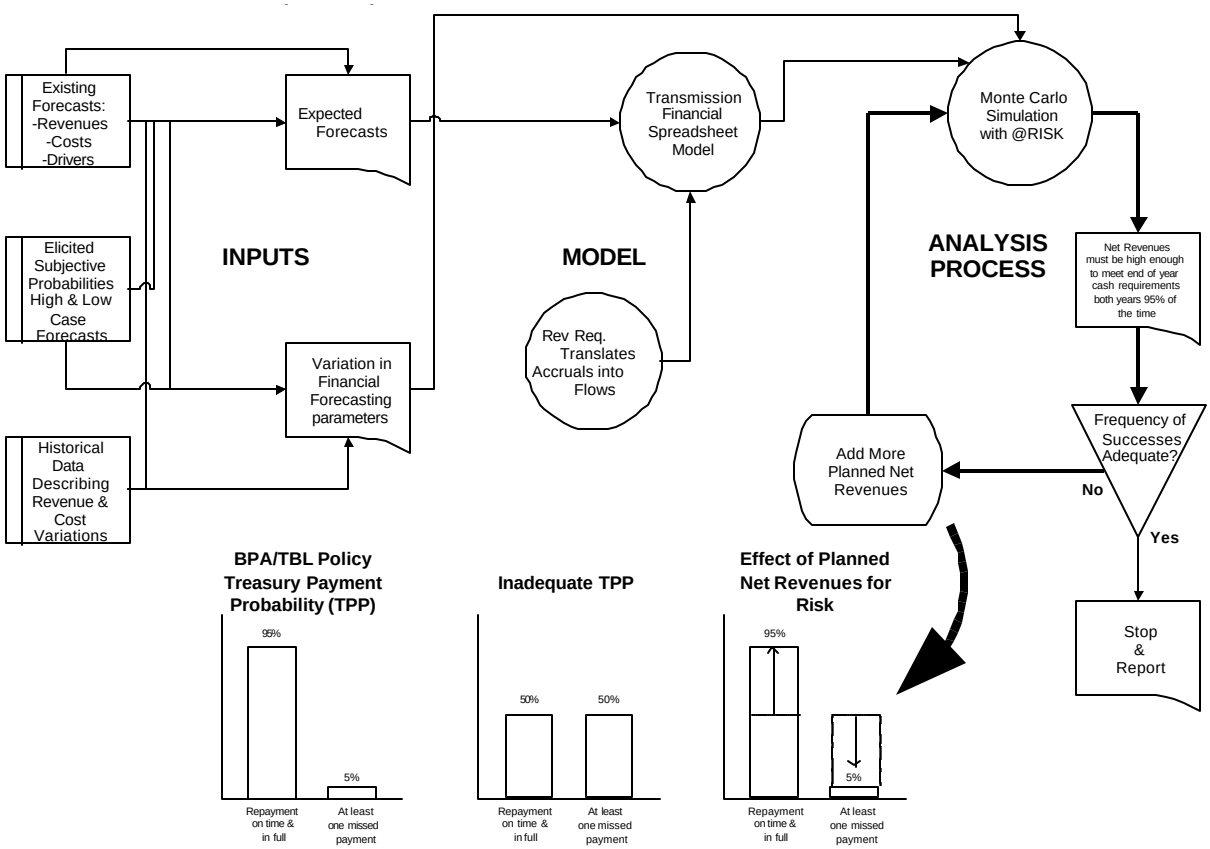
Transmission Risk Analysis

To quantify the effects of risk on the finances of BPA's transmission function, BPA analyzes the effects of uncertainty in costs and revenues on transmission cash flows using a Monte Carlo simulation method. *See* Figure 2.1. The analysis is used to estimate the probability of successful Treasury payment (on time and in full) for both years of the rate period. Successful Treasury

payment is deemed to occur when the end-of-year cash reserve for the transmission function, after Treasury payments are made, are sufficient to cover the transmission function's working capital requirement of $20 million. The working capital threshold is based on the monthly net cash flow patterns and requirements for the transmission function.

Figure 2.1

Transmission Rate Case Risk Analysis -



The risk analysis is used in an iterative process with the Revenue Requirement Study and the Transmission Rate Study (TRS). The risk analysis uses data developed in both of these studies and contributes data to those studies in the form of PNRR. Initial input values for point estimates of costs and revenues come from the Revenue Requirements Study and the TRS and, when combined with inputs describing uncertainty in costs and revenues, provide the basis for

the initial estimate of PNRR. The PNRR is, in turn, provided as an expense input to the Revenue Requirements Study and the TRS, changing the transmission revenue requirement and transmission rates. This iterative analysis process is continued until successive estimates of PNRR converge.

The risk analysis covers the period FY1999 through FY 2003. This time frame is used to permit analyzing the change in revenues, costs, and accrual to cash adjustments that are expected to occur between the development of the initial rate proposal and the end of the rate period. The advantage to this approach is that cash reserves by the end of the 1996-2001 rate period may be directly estimated, including the impact of uncertainty, thus helping define the starting conditions for the 2002-2003 rate period.

Transmission Risk Analysis Processor Spreadsheet

The foundation of the risk analysis is a transmission financial spreadsheet model, called the Transmission Risk Analysis Processor (TRAP). *See* Revenue Requirements Study Documentation, at TR-02-E-BPA-01A. This model was developed to estimate the effects of risk and risk mitigation on end-of-year cash reserves and likelihood of successful Treasury payment during the rate period. Cash reserve levels at the end of the fiscal year determine whether BPA is able to meet its Treasury payment obligation. End of year cash balances during the rate period are, therefore, the main outcome of the model. The TRAP contains individual work sheets including: an input matrix of revenues and costs, an income statement, a cash flow statement, and individual work sheets for variables specified with uncertainty in the model. Parameters for the probability distributions were developed from historical data and analysis of risk factors.

2.3 Capital Funding

BPA transmission capital outlay projections for the initial proposal are $490,637 million for the FY 2002-2003 rate period. These investments include:

- transmission programs ($449.7 million);
- environmental program ($18.3 million);
- investment in ADP and other capital equipment ($22.6 million).

This Study does not project that any capital investments will be funded from current revenues. These amounts will be updated for the revenue requirement study in the final transmission rates proposal.

Bonds Issued to the Treasury

Bonds issued to Treasury will be the source of capital used to finance FY 2002 - 2003 BPA capital program investments. Interest rates on bonds issued by BPA to the U.S. Treasury are set at market interest rates comparable to securities issued by other agencies of the U.S. Government. Interest rates on bonds projected to be issued are included in chapter 6 of the Documentation for Revenue Requirement Study, TR-02-E-BPA-01A.

Federal Appropriations

This Study includes the original capital investments in the transmission system that were financed by Federal appropriations. No new investments in the rate period are forecast to be funded by appropriations. "The Bonneville Appropriations Refinancing Act" (the Refinancing Act) was enacted in April 1996. This Refinancing Act reset the unpaid principal of FCRPS appropriations and reassigned interest rates. New principal amounts were established at the beginning of FY 1997, at the present value of the principal and annual interest payments BPA

would make to the Treasury for these obligations in the absence of the Refinancing Act, plus $100 million. Before implementation of the Refinancing Act there were $1,545.7 million Bonneville Power Administration appropriations outstanding. After the implementation of the Refinancing Act, $1,075.4 million in Bonneville Power Administration Appropriations were outstanding. The Refinancing Act restricted prepayment of the new principal to $100 million in the FY 1996-2000 period. Other repayment terms were unaffected. The repayment studies in the Study fully incorporate implementation of the Refinancing Act. For further discussion of the Refinancing Act, see the Generation 2002 Initial Power Rate Proposal Revenue Requirement Study, WP-02-E-BPA-02, Chapter 2, Section 2.3, p. 26 and Chapter 8 of the Documentation for the Generation Revenue Requirement Study, WP-02-E-BPA-02A.

3. DEVELOPMENT OF REPAYMENT STUDIES

Repayment studies are performed as the first step in determining revenue requirements. The studies establish the schedule of annual U.S. Treasury amortization for the rate test period and the resulting interest payments.

In the 1996 rate case, repayment studies for transmission were run with 45 year repayment periods for each rate test year. For this study, the repayment period horizon has been set at 35 years. This shorter study horizon reflects the fact that the outstanding appropriations and bonds in the transmission system are fully repaid within this period. It also more closely matches the terms of the shorter maturity bonds being issued, and reflects the estimated average service life of plant which is now 40 years. Shortening the horizon any further, would result in some obligations not being paid by their due dates.

The Revenue Requirement Study includes the results of transmission repayment studies for each of the two years in the rate test period, FY 2002 – 2003. In conducting the repayment studies, BPA includes currently outstanding and projected transmission repayment obligations on appropriations and on bonds issued to Treasury. Funding for replacements projected during the repayment period are also included in the repayment study, consistent with the requirements of RA 6120.2.

Historical appropriations are scheduled to be repaid within the expected useful life of the associated facility (currently 40 years), or 50 years, whichever is less. Actual bonds issued by BPA to the Treasury may be for terms ranging from 3 to 45 years, taking into account the estimated average service lives for investments and prudent financing and cash management factors. In the repayment studies, all projected bonds have a term of 35 years for transmission investment and 15 years for environment investment. Many bonds are issued with a provision

that allows the bond to be called after a certain time, typically five years. Bonds may also be issued with no early call provision. Early retirement of eligible bonds requires that BPA pay a bond premium to the Treasury. The premium that is paid on any Federal bond is considered to be due when the Federal bond is due. The premium that must be paid decreases with the age of the bond, and is equivalent, in total, to a fixed premium and a reduced interest rate. This reduced effective interest rate enters into the comparison with other Federal investments and obligations to determine which should be repaid first. Bonds are issued to finance BPA transmission and environment and repaid within the provisions of each bond agreement with the Treasury.

Based on these parameters, the repayment study establishes a schedule of planned amortization payments and resulting gross interest expense by determining the lowest levelized debt service stream necessary to repay all transmission obligations within the required repayment period.

Further discussion of the repayment program and repayment program tables is included in this Study at Appendix A; and in Chapter 5 of the Documentation for Revenue Requirement Study, TR-02-E-BPA-01A. *See* Chapter 5 of this Study, for an explanation of repayment policies and requirements.

4. FY 2002 TRANSMISSION REVENUE REQUIREMENTS

This chapter explains the cost accounting formats used to develop revenue requirements for FYs 2002 and 2003. Section 4.1.1 provides a line-by-line description of the Revenue Requirement Income Statement and Section 4.1.2 provides a line-by-line description of the Revenue Requirement Statement of Cash Flows.

4.1 Revenue Requirement Format

For each year of a rate test period, BPA prepares two tables that reflect the process by which revenue requirements are determined. The Income Statement includes projections of Total Expenses, Planned Net Revenues for Risk, and, if necessary, a Minimum Required Net Revenues component. The Statement of Cash Flows shows the analysis used to determine Minimum Required Net Revenues and the cash available for risk mitigation.

The Income Statement (Table 4.1A) displays the components of the annual revenue requirements, which include Total Operating Expenses (Line 5), Net Interest Expense (Line 14), Minimum Required Net Revenues (Line 16), and Planned Net Revenues for Risk (Line 17). The sum of these four major components is the Total Revenue Requirement (Line 17).

The amounts shown in Total Operating Expenses and Net Interest Expense are primarily established outside the rate setting process. The Minimum Required Net Revenues (Line 16) result from an analysis of the Statement of Cash Flow (Table 4.1B). Minimum Required Net Revenues may be necessary to ensure that revenue requirements are sufficient to cover all cash

requirements, including annual amortization of the Federal investment as determined in the transmission repayment studies.

The Statement of Cash Flow analyzes annual cash inflows and outflows. Cash Provided by Current Operations (Line 8), driven by the Non-cash Expenses shown in Lines 4, 5 and 6, must be sufficient to compensate for the difference between Cash Used for Capital Investments (Line 12) and Cash From Treasury Borrowing (Line 17). If cash provided by Current Operations are not sufficient, Minimum Required Net Revenues must be included in revenue requirements to accommodate the shortfall, yielding at least a zero annual Increase in Cash (Line 18). The Minimum Required Net Revenues shown on the Statement of Cash Flows (Line 2) is then incorporated in the Income Statement (Line 16).

4.1.1 Income Statement. Below is a line-by-line description of the components in the Income Statement (Table 4.1A). The documentation for the Revenue Requirement Study, TR-02-E-BPA-01A, provides additional information on the development and use of the data contained in the tables.

Operation & Maintenance (Line 2)

Operation & Maintenance represents FCRTS O&M expenses incurred by BPA. Specific BPA O&M expenses include transmission scheduling, transmission marketing, transmission system operations, transmission system maintenance, transmission system development, environment, non-Federal transmission arrangements, leases, TBL general and administrative, TBL support services, Civil Service Retirement System pension expense, and

corporate administrative and support services. (See Chapter 3, Documentation, TR-02-E-BPA-01A)

Inter-Business Line Expenses (Line 3)

Inter-business line expenses, resulting from functional separation and ancillary services products, include the generation inputs to ancillary services from the PBL, station service and remedial action schemes, and the cost of COE and BOR transmission facilities serving the network and utility delivery segments. (See Chapter 3, Documentation, TR-02-E-BPA-01A).

Federal Projects Depreciation (Line 4)

Depreciation is the annual capital recovery expense associated with FCRTS plant-in-service. BPA transmission and general plant are depreciated by the straight-line method of calculation, using the remaining life technique. (See Chapter 4, Documentation, TR-02-E-BPA-01A).

Total Operating Expenses (Line 5)

Total Operating Expenses is the sum of the above expenses (Lines 2 through 4).

Interest on Appropriated Funds (Line 8)

Interest on Appropriated Funds consists of interest on the pre-self financing BPA appropriations as determined in the transmission repayment studies. (See Chapter 3 Documentation, TR-02-E-BPA-01A).

Interest on Long-Term Debt (Line 9)

Interest on long-term debt includes interest on bonds that BPA issues to the U.S. Treasury to fund investments in transmission plant, environment, general plant supportive of transmission, and capital equipment, Such interest expense is determined in the transmission repayment studies. Any payments of premiums for bonds projected to be amortized are included in this line. Also included is an interest income credit calculated in the transmission repayment studies on funds to be collected during each year for payments of Federal interest and amortization at the end of the fiscal year. A further explanation of the calculation of the interest credit computed within the transmission repayment studies is included in the Appendix. (See Chapter 3, Documentation, TR-02-E-BPA-01A).

Interest Credit on Cash Reserves (Line 10)

Interest income is also computed on the projected year-end cash balances in the BPA fund attributable to the transmission function that carry over into the next year. It is credited against bond interest. (See Chapter 5, Documentation, TR-02-E-BPA-01A).

Amortization of Capitalized Bond Premiums (Line 11)

When a bond issued to the U.S. Treasury is refinanced, any call premium resulting from early retirement of the original bond is capitalized and included in the principal of the new bond. The capitalized call premium is then amortized over the term of the new bond. The annual amortization is a non-cash component of interest expense. (See Chapter 3, Documentation, TR-02-E-BPA-01A).

Capitalization Adjustment (Line 12)

Implementation of the Bonneville Appropriations Refinancing Act entailed a change in capitalization on BPA's financial statements. Outstanding appropriations were reduced as a result of the refinancing by $470 million in the transmission function. The reduction is recognized annually over the remaining repayment period of the refinanced appropriations. The annual recognition of this adjustment is based on the increase in annual interest expense resulting from implementation of the Act, as shown in repayment studies for the year of the refinancing transaction (1997). The capitalization adjustment is included on the income statement as a non-cash, contra-expense. (See Chapter 3, Documentation, TR-02-E-BPA-01A).

Allowance for Funds Used During Construction (AFUDC) (Line 13)

AFUDC is a credit against interest on long-term debt (Line 9). This non-cash reduction to interest expense reflects an estimate of interest on the funds used during the construction period of facilities that are not yet in service. AFUDC is capitalized along with other construction costs and is recovered through rates over the expected service life of the related plant as part of the depreciation expense after the facilities are placed in service.

Net Interest Expense (Line 14)

Net Interest Expense is computed as the sum of Interest on Appropriated Funds (Line 8), Interest on Long-Term Debt (Line 9), Interest Credit on Cash Reserves (Line 10), Amortization of Capitalized Bond Premiums (Line 11), Capitalization Adjustment (Line 12), and AFUDC (Line 13).

Total Expenses (Line 15)

Total Expenses are the sum of Total Operating Expenses (Line 5) and Net Interest Expense (Line 14).

Minimum Required Net Revenues (Line 16)

Minimum Required Net Revenues, an input from Line 2 of the Statement of Cash Flows (Table 4.1B), may be necessary to cover cash requirements in excess of accrued expenses. An explanation of the method used for determining the Minimum Required Net Revenues is included in Section 4.1.2 below.

Planned Net Revenues for Risk (Line 17)

Planned Net Revenues for Risk are the amount of net revenues to be included in rates for financial risk mitigation. Planned net revenues for risk averaging $10.3 million per year (in addition to starting reserves and the cash flow when non-cash expenses exceed cash payments) are available to mitigate risk in FYs 2002 and 2003.

Total Planned Net Revenues (Line 18)

Total Planned Net Revenues is the sum of Minimum Required Net Revenues (Line 16) and Planned Net Revenues for Risk (Line 17).

Total Revenue Requirement (Line 19)

Total Revenue Requirement is the sum of Total Expenses (Line 15) and Total Planned Net Revenues (Line 18).

4.1.2 Statement of Cash Flows. Below is a line-by-line description of each of the components in the Statement of Cash Flows (Table 4.1B). Documentation, TR-02-E-BPA-01A, provides additional information related to the use and development of the data contained in the table.

Minimum Required Net Revenues (Line 2)

Determination of this line is a result of annual cash inflows and outflows shown on the Statement of Cash Flows. Minimum Required Net Revenues may be necessary so that the cash provided from operations will be sufficient to cover the planned amortization payments (the difference between Lines 12 and 17) without causing the Annual Increase (Decrease) in Cash (Line 18) to be negative. The Minimum Required Net Revenues amount determined in the Statement of Cash Flows is incorporated in the Income Statement (Line 16).

Federal Projects Depreciation (Line 4)

Depreciation is from the Income Statement (Table 4.1A, Line 4). It is included in computing Cash Provided By Operations (Line 8) because it is a non-cash expense of the FCRTS.

Amortization of Capitalized Bond Premiums (Line 5)

Amortization of Capitalized Bond Premiums, from the Income Statement (Table 4.1A, Line 11), is a non-cash expense.

Capitalization Adjustment (Line 6)

The Capitalization Adjustment, from the Income Statement (Table 4.1A, Line 12), is a non-cash (contra) expense. (See Chapter 3, Documentation, TR-02-E-BPA-01A).

Accrual Revenues (AC Intertie/Fiber) (Line 7)

BPA accounts for the AC Intertie non-Federal capacity ownership lump-sum payments received in FY 1995 as unearned revenues that are recognized as annual accrued revenues over the estimated average service life of BPA's transmission system (straight-line over 45 years). Similarly, some of the leases of fiber optic capacity have included up-front payments, the annual accrued revenues for which are being recognized over the life of the particular contract. The annual accrual revenues, which are part of the total revenues recovering the FCRTS revenue requirement, are included here as a non-cash adjustment to cash from current operations.

Cash Provided By Current Operations (Line 8)

Cash Provided By Current Operations, the sum of Lines 2, 4, 5, 6 and 7, is available for the year to satisfy cash requirements.

Investment in Utility Plant (Line 11)

Investment in Utility Plant represents the annual increase in capital spending related to additions and replacements to plant-in-service for BPA. (See Chapter 7, Documentation, TR-02-E-BPA-01A).

Cash Used for Capital Investments (Line 12)

Cash Used for Capital Investments is Line 11.

Increase in Long-Term Debt (Line 14)

Increase in Long-Term Debt reflects the new bonds issued by BPA to the U.S. Treasury to fund transmission and capital equipment programs. Also included in this amount may be any notes issued to the U.S. Treasury. (See Chapter 7, Documentation, TR-02-E-BPA-01A).

Repayment of Long-Term Debt (Line 15)

Repayment of Long-Term Debt is BPA's planned repayment of outstanding bonds issued by BPA to the U.S. Treasury as determined in the repayment studies. (See Chapter 3, Documentation, TR-02-E-BPA-01A.

Repayment of Capital Appropriations (Line 16)

Repayment of Capital Appropriations represents projected amortization of outstanding BPA appropriations (pre self-financing) as determined in the repayment studies. (See Chapter 3, Documentation, TR-02-E-BPA-01A).

Cash From Treasury Borrowing and Appropriations (Line 17)

Cash From Treasury Borrowing and Appropriations is the sum of Lines 14 through 16. This is the net cash flow resulting from increases in cash from new long-term debt and decreases in cash from repayment of long-term debt and capital appropriations.

Annual Increase (Decrease) in Cash (Line 18)

Annual Increase (Decrease) in Cash, the sum of Lines 8, 12, and 17, reflects the annual net cash flow from current operations and investing and financing activities. Revenue requirements are set to meet all projected annual cash flow requirements, as included on the Statement of Cash Flows. A decrease shown in this line would indicate that annual revenues would be insufficient to cover the year's cash requirements. In such cases, Minimum Required Net Revenues are included to offset such decrease. See discussion above of Minimum Required Net Revenues (Line 2).

Planned Net Revenues For Risk (Line 19)

Planned Net Revenues For Risk reflects the amounts included in revenue requirements to meet BPA's risk mitigation objectives (from Table 4.1A, Line 17.)

Total Annual Increase (Decrease) in Cash (Line 20)

Total Annual Increase (Decrease) in Cash, the sum of Lines 18 and 19, is the total annual cash that is projected to be available to add to BPA's cash reserves.

4.2 Current Revenue Test

Consistent with RA 6120.2, the continuing adequacy of existing rates must be tested annually. The current revenue test determines whether the revenues expected from current rates can continue to meet cost recovery requirements.

For the rate test period, the demonstration of the inadequacy of current rates is shown on Tables 4.2A and 4.2B. Table 4.2A is a pro forma income statement for each year. Table 4.2B, Statement of Cash Flows, tests the sufficiency of the resulting Net Revenues from Table 4.2A (Line 17) for making the planned annual amortization payments and achieving the Administrator's financial objectives. This is demonstrated by the Total Annual Increase (Decrease) in Cash (Line 18). As explained in section 2 of the Appendix, the annual cash flow (Line 18) must be at least zero to demonstrate the adequacy of the projected revenues to cover all cash payment requirements. The current revenue test shows that current rates are substantially insufficient to satisfy cost recovery requirements in the rate period.

Table 4.3 shows the inadequacy of current rates to satisfy cost recovery requirements over the 35-year repayment period. The focal point of these tables is the Net Position (Column K), which is the amount of funds provided by revenues that remain after meeting annual expenses requiring cash for the rate period and repayment of the Federal investment. Thus, if the Net Position is zero or greater in each year of the rate approval period through the repayment period, the projected revenues demonstrate BPA's ability to repay the Federal investment in the FCRPS within the allowable time. As shown in Column K, the Net Position results are negative for each year of the rate approval period and in each year of the repayment period.

4.3 Revised Revenue Test

Consistent with RA 6120.2, the adequacy of proposed rates must be demonstrated. The revised revenue test determines whether the revenues projected from proposed rates will meet cost

recovery requirements as well as the Treasury payment probability risk goal for the rate approval period. The revised revenue test was conducted using the forecast of revenues under proposed rates. (See Transmission Rate Study, Chapter 2, TR-02-E-BPA-03). The results of the revised revenue test demonstrate that proposed rates are adequate to fulfill the basic cost recovery requirements for the rate approval period of FYs 2002 and 2003.

For the rate test period, the demonstration of the adequacy of proposed rates is shown on Tables 4.4A and 4.4B. Table 4.4A presents pro forma income statements for each year.

Table 4.4B, Statements of Cash Flows, tests the sufficiency of the resulting Net Revenues from Table 4.4A (Line 17) for making the planned annual amortization payments and achieving the Administrator's financial objectives. This is demonstrated by the Total Annual Increase (Decrease) in Cash (Line 18). As explained in section 2 of the Appendix, the annual cash flow (Line 18) must be at least zero to demonstrate the adequacy of the projected revenues to cover all cash payment requirements.

4.4 Repayment Test at Proposed Rates

Table 4.5 demonstrates whether projected revenues from proposed rates are adequate to meet the cost recovery criteria of RA 6120.2 over the repayment period. The data are presented in a format consistent with the revised revenue tests (Tables 4.4A and 4.4B) and separate accounting analyses. The focal point of these tables is the Net Position (Column K), which is the amount of funds provided by revenues that remain after meeting annual expenses requiring cash for the rate

period and repayment of the Federal investment. Thus, if the Net Position is zero or greater in each year of the rate approval period through the repayment period, the projected revenues demonstrate BPA's ability to repay the Federal investment in the FCRPS within the allowable time. As shown in Column K, the resulting Net Position is greater than zero for each year of the rate approval period and in each year of the repayment period.

The historical data on this table have been taken from BPA's separate accounting analysis. The rate test period data have been developed specifically for this rate filing. The repayment period data are presented consistent with the requirements of RA 6120.2.

TABLE 4.1A
TRANSMISSION REVENUE REQUIREMENT
INCOME STATEMENT
($thousands)

		A FY 2002	B FY 2003
1	OPERATING EXPENSES		
2	OPERATION AND MAINTENANCE	238,071	232,195
3	INTER-BUSINESS LINE EXPENSES	84,276	84,243
4	FEDERAL PROJECTS DEPRECIATION	182,694	195,358
5	TOTAL OPERATING EXPENSES	505,041	511,796
6	INTEREST EXPENSE		
7	INTEREST ON FEDERAL INVESTMENT -		
8	ON APPROPRIATED FUNDS	66,904	65,280
9	ON LONG-TERM DEBT	143,126	143,418
10	INTEREST CREDIT ON CASH RESERVES	(5,707)	(7,649)
11	AMORTIZATION OF CAPITALIZED BOND PREMIUMS	3,220	3,220
12	CAPITALIZATION ADJUSTMENT	(19,618)	(20,174)
13	AFUDC	(5,040)	(5,225)
14	NET INTEREST EXPENSE	182,885	178,870
15	TOTAL EXPENSES	687,926	690,666
16	MINIMUM REQUIRED NET REVENUES 1/	0	0
17	PLANNED NET REVENUES FOR RISK	10,751	9,829
18	TOTAL PLANNED NET REVENUES	10,751	9,829
19	**TOTAL REVENUE REQUIREMENT**	**698,677**	**700,495**

1/ SEE NOTE ON CASH FLOW TABLE.

TABLE 4.1B
TRANSMISSION REVENUE REQUIREMENT
STATEMENT OF CASH FLOWS
($thousands)

		A FY 2002	B FY 2003
1	CASH FROM CURRENT OPERATIONS:		
2	MINIMUM REQUIRED NET REVENUES 1/	0	0
3	EXPENSES NOT REQUIRING CASH:		
4	FEDERAL PROJECTS DEPRECIATION	182,694	195,358
5	AMORTIZATION OF CAPITALIZED BOND PREMIUMS	3,220	3,220
6	CAPITALIZATION ADJUSTMENT	(19,618)	(20,174)
7	ACCRUAL REVENUES (AC INTERTIE/FIBER)	(4,031)	(4,031)
8	CASH PROVIDED BY CURRENT OPERATIONS	162,265	174,373
9	CASH USED FOR CAPITAL INVESTMENTS:		
10	INVESTMENT IN:		
11	UTILITY PLANT	(252,300)	(248,416)
12	CASH USED FOR CAPITAL INVESTMENTS	(252,300)	(248,416)
13	CASH FROM TREASURY BORROWING AND APPROPRIATIONS:		
14	INCREASE IN LONG-TERM DEBT	252,300	248,416
15	REPAYMENT OF LONG-TERM DEBT	(124,226)	(124,233)
16	REPAYMENT OF CAPITAL APPROPRIATIONS	(23,913)	(26,247)
17	CASH FROM TREASURY BORROWING AND APPROPRIATIONS	104,161	97,936
18	ANNUAL INCREASE (DECREASE) IN CASH	14,126	23,893
19	PLANNED NET REVENUES FOR RISK	10,751	9,829
20	TOTAL ANNUAL INCREASE (DECREASE) IN CASH	24,877	33,722

1/ Line 18 must be greater than or equal to zero, otherwise net revenues will be added so that there are no negative cash flows for the year.

TABLE 4.2A
CURRENT REVENUE TEST
INCOME STATEMENT
($thousands)

		A FY 2002	B FY 2003
1	REVENUES FROM CURRENT RATES	504,061	515,058
2	OPERATING EXPENSES		
3	OPERATION AND MAINTENANCE	238,071	232,195
4	INTER-BUSINESS LINE EXPENSES	84,276	84,243
5	FEDERAL PROJECTS DEPRECIATION	182,694	195,358
6	TOTAL OPERATING EXPENSES	505,041	511,796
7	INTEREST EXPENSE		
8	INTEREST ON FEDERAL INVESTMENT -		
9	ON APPROPRIATED FUNDS	66,904	65,280
10	ON LONG-TERM DEBT	143,126	143,418
11	INTEREST CREDIT ON CASH RESERVES		
12	AMORTIZATION OF CAPITALIZED BOND PREMIUMS	3,220	3,220
13	CAPITALIZATION ADJUSTMENT	(19,618)	(20,174)
14	AFUDC	(5,040)	(5,225)
15	NET INTEREST EXPENSE	188,592	186,519
16	TOTAL EXPENSES	693,633	698,315
17	NET REVENUES	(189,572)	(183,257)

TABLE 4.2B
TRANSMISSION REVENUE REQUIREMENT
CURRENT REVENUE TEST
STATEMENT OF CASH FLOWS
($thousands)

		A FY 2002	B FY 2003
1	CASH FROM CURRENT OPERATIONS:		
2	NET REVENUES	(189,572)	(183,257)
3	EXPENSES NOT REQUIRING CASH:		
4	FEDERAL PROJECTS DEPRECIATION	182,694	195,358
5	AMORTIZATION OF CAPITALIZED BOND PREMIUMS	3,220	3,220
6	CAPITALIZATION ADJUSTMENT	(19,618)	(20,174)
7	ACCRUAL REVENUES (AC INTERTIE/FIBER)	(4,031)	(4,031)
8	CASH PROVIDED BY CURRENT OPERATIONS	(27,307)	(8,884)
9	CASH USED FOR CAPITAL INVESTMENTS:		
10	INVESTMENT IN:		
11	UTILITY PLANT	(252,300)	(248,416)
12	CASH USED FOR CAPITAL INVESTMENTS	(252,300)	(248,416)
13	CASH FROM TREASURY BORROWING AND APPROPRIATIONS:		
14	INCREASE IN LONG-TERM DEBT	252,300	248,416
15	REPAYMENT OF LONG-TERM DEBT	(124,226)	(124,233)
16	REPAYMENT OF CAPITAL APPROPRIATIONS	(23,913)	(26,247)
17	CASH FROM TREASURY BORROWING AND APPROPRIATIONS	104,161	97,936
18	ANNUAL INCREASE (DECREASE) IN CASH	(175,446)	(159,364)

TABLE 4.3
FEDERAL COLUMBIA RIVER TRANSMISSION SYSTEM
TRANSMISSION REVENUES FROM CURRENT RATES
REVENUE REQUIREMENT AND REPAYMENT STUDY RESULTS THROUGH THE REPAYMENT PERIOD
($000)

YEAR COMBINED CUMULATIVE	A REVENUES (STATEMENT A)	B OPERATION & MAINTENANCE (STATEMENT E)	C PURCHASE AND EXCHANGE POWER (STATEMENT E)	D DEPRECIATION	E NET INTEREST (STATEMENT D)	F NET REVENUES (F=A-B-C-D-E)	G NONCASH EXPENSES 1/ (COLUMN D)	H FUNDS FROM OPERATION (H=F+G)	I AMORTIZATION (REV REQ STUDY TABLE 12B)	J IRRIGATION AMORTIZATION (STATEMENT C)	K NET POSITION (K=H-I-J)
1977	3,298,951	963,839	348,748	807,047	1,220,170	(40,853)	807,047	766,194	628,460		137,734
TRANSMISSION											
1978	116,430	69,767		51,503	60,337	(65,177)	51,503	(13,674)	194		(13,868)
1979	107,017	73,801		53,756	69,112	(89,652)	53,756	(35,896)	26		(35,922)
1980	170,603	77,594		55,613	78,039	(40,643)	55,613	14,970	2		14,968
1981	202,740	87,243		59,638	87,665	(31,806)	59,638	27,832	1,236 **2/**		26,596
1982	269,200	91,562		64,458	106,190	6,990	64,458	71,448	0		71,448
1983	359,641	99,520		67,969	138,268	53,884	67,969	121,853	0		121,853
1984	417,821	101,406		60,360	158,783	97,272	60,360	157,632	26,722 **3/**		130,910
1985	510,030	141,623		71,012	160,336	137,059	71,012	208,071	199,646		8,425
1986	446,435	144,438		77,574	178,460	45,963	77,574	123,537	180,915		(57,378)
1987	456,728	148,596		85,807	177,020	45,305	85,807	131,112	148,860		(17,748)
1988	405,154	167,102		90,076	164,131	(16,155)	90,076	73,921	44,757		29,164
1989	422,202	175,240		93,076	164,044	(10,158)	93,076	82,918	119,322		(36,404)
1990	426,855	183,512		98,881	153,440	(8,978)	98,881	89,903	99,460		(9,557)
1991	439,871	199,668		98,731	139,458	2,014	98,731	100,745	70,930		29,815
1992	428,769	209,868		101,946	143,789	(26,834)	101,946	75,112	190,864		(115,752)
1993	417,555	189,926		101,929	173,271	(47,571)	101,929	54,358	130,989		(76,631)
1994	462,511	202,309		103,956	179,052	(22,806)	103,956	81,150	55,977		25,173
1995	490,264	200,501		112,940	181,744	(4,921)	112,940	264,019 **/4**	281,789		(17,770)
1996	534,456	206,128		125,961	165,175	37,192	125,961	148,153 **/5**	155,000		(6,847)
1997	503,217	197,259		124,457	176,929	4,572	124,457	129,029	125,000		4,029
1998	539,925	228,803		125,130	174,022	11,970	79,448	91,418	185,955		(94,537)
1999	552,134	231,410		147,176	173,574	(26)	100,936	100,910	138,600		(37,690)
COST EVALUATION PERIOD											
2000	554,132	264,064		153,955	163,065	(26,952)	106,200	79,248	114,587		(35,339)
2001	564,166	270,138		153,955	172,193	(32,120)	105,963	73,843	59,060		14,783
RATE APPROVAL PERIOD											
2002	504,061	322,347		182,694	188,592	(189,572)	162,265	(27,307)	148,139		(175,446)
2003	515,058	316,438		195,358	186,519	(183,257)	174,373	(8,884)	150,480		(159,364)

REPAYMENT PERIOD	A REVENUES (STATEMENT A)	B OPERATION & MAINTENANCE (STATEMENT E)	C PURCHASE AND EXCHANGE POWER (STATEMENT E)	D DEPRECIATION	E NET INTEREST (STATEMENT D)	F NET REVENUES (F=A-B-C-D-E)	G NONCASH EXPENSES 1/ (COLUMN D)	H FUNDS FROM OPERATION (H=F+G)	I AMORTIZATION (REV REQ STUDY TABLE 12B)	J IRRIGATION AMORTIZATION (STATEMENT C)	K NET POSITION (K=H-I-J)
2004	515,058	316,438	(1,041)	195,358	193,820	(189,517)	174,373	(15,144)	150,650		(165,794)
2005	515,058	316,438	(1,073)	195,358	195,011	(190,676)	174,373	(16,303)	149,491		(165,794)
2006	515,058	316,438	(1,104)	195,358	194,206	(189,840)	174,373	(15,467)	150,327		(165,794)
2007	515,058	316,438	(1,134)	195,358	190,474	(186,078)	174,373	(11,705)	154,089		(165,794)
2008	515,058	316,438	(1,164)	195,358	190,805	(186,379)	174,373	(12,006)	153,788		(165,794)
2009	515,058	316,438	(1,193)	195,358	191,846	(187,391)	174,373	(13,018)	152,776		(165,794)
2010	515,058	316,438	(1,221)	195,358	190,507	(186,024)	174,373	(11,651)	154,143		(165,794)
2011	515,058	316,438	(1,249)	195,358	190,302	(185,791)	174,373	(11,418)	154,376		(165,794)
2012	515,058	316,438	(1,277)	195,358	190,611	(186,072)	174,373	(11,699)	154,095		(165,794)
2013	515,058	316,438	(1,303)	195,358	190,785	(186,220)	174,373	(11,847)	153,947		(165,794)
2014	515,058	316,438	(1,329)	195,358	191,057	(186,466)	174,373	(12,093)	153,701		(165,794)
2015	515,058	316,438	(1,355)	195,358	193,734	(189,117)	174,373	(14,744)	151,050		(165,794)
2016	515,058	316,438	(1,380)	195,358	198,631	(193,989)	174,373	(19,616)	146,178		(165,794)
2017	515,058	316,438	(1,404)	195,358	199,457	(194,791)	174,373	(20,418)	145,376		(165,794)
2018	515,058	316,438	(1,428)	195,358	200,597	(195,907)	174,373	(21,534)	144,260		(165,794)
2019	515,058	316,438	(1,451)	195,358	200,936	(196,223)	174,373	(21,850)	143,944		(165,794)
2020	515,058	316,438	(1,474)	195,358	205,499	(200,763)	174,373	(26,390)	139,404		(165,794)
2021	515,058	316,438	(1,496)	195,358	208,276	(203,518)	174,373	(29,145)	136,649		(165,794)
2022	515,058	316,438	(1,517)	195,358	211,228	(206,449)	174,373	(32,076)	133,718		(165,794)
2023	515,058	316,438	(1,538)	195,358	209,968	(205,168)	174,373	(30,795)	134,999		(165,794)
2024	515,058	316,438	(1,557)	195,358	218,761	(213,942)	174,373	(39,569)	126,225		(165,794)
2025	515,058	316,438	(1,576)	195,358	222,779	(217,941)	174,373	(43,568)	122,226		(165,794)
2026	515,058	316,438	(1,594)	195,358	227,157	(222,301)	174,373	(47,928)	117,866		(165,794)
2027	515,058	316,438	(1,613)	195,358	229,995	(225,120)	174,373	(50,747)	115,045		(165,792)
2028	515,058	316,438	(1,629)	195,358	232,653	(227,762)	174,373	(53,389)	112,405		(165,794)
2029	515,058	316,438	(1,644)	195,358	243,493	(238,587)	174,373	(64,214)	101,580		(165,794)
2030	515,058	316,438	(1,659)	195,358	248,932	(244,011)	174,373	(69,638)	96,156		(165,794)
2031	515,058	316,438	(1,674)	195,358	253,837	(248,901)	174,373	(74,528)	91,266		(165,794)
2032	515,058	316,438	(1,685)	195,358	260,657	(255,710)	174,373	(81,337)	84,457		(165,794)
2033	515,058	316,438	(1,696)	195,358	268,997	(264,039)	174,373	(89,666)	76,128		(165,794)
2034	515,058	316,438	(1,706)	195,358	277,686	(272,718)	174,373	(98,345)	67,449		(165,794)
2035	515,058	316,438	(1,715)	195,358	287,509	(282,532)	174,373	(108,159)	57,635		(165,794)
2036	515,058	316,438	(1,721)	195,358	297,678	(292,695)	174,373	(118,322)	47,472		(165,794)
2037	515,058	316,438	(1,727)	195,358	308,707	(303,718)	174,373				
2038	515,058	316,438	(1,732)	195,358	320,626	(315,632)	174,373	(141,259)	24,535		(165,794)
TRANSMISSION TOTALS	28,844,005	15,675,593	(51,059)	9,495,441	11,750,425	(8,026,395)	8,531,883	775,833	4,724,459	0	(6,050,083)

1/CONSISTS OF DEPRECIATION PLUS ANY ACCOUNTING WRITE-OFFS INCLUDED IN EXPENSES.

2/CONSISTS OF AMORTIZATION ($1,650) AND DEFERRAL PAYMENT ($2,760).

3/CONSISTS OF AMORTIZATION ($1,342) AND DEFERRAL PAYMENT ($190,952).

4/INCREASED BY 156,000 AC INTERTIE CAPACITY OWNERSHIP PAYMENT.

5/REDUCED BY $15,000 OF REVENUE FINANCING.

TABLE 4.4A
REVISED REVENUE TEST
INCOME STATEMENT
($thousands)

		A FY 2002	B FY 2003
1	REVENUES FROM PROPOSED RATES	696,886	703,201
2	OPERATING EXPENSES		
3	OPERATION AND MAINTENANCE	238,071	232,195
4	INTER-BUSINESS LINE EXPENSES	84,276	84,243
5	FEDERAL PROJECTS DEPRECIATION	182,694	195,358
6	TOTAL OPERATING EXPENSES	505,041	511,796
7	INTEREST EXPENSE		
8	INTEREST ON FEDERAL INVESTMENT -		
9	ON APPROPRIATED FUNDS	66,904	65,280
10	ON LONG-TERM DEBT	143,126	143,418
11	INTEREST CREDIT ON CASH RESERVES	(5,457)	(7,349)
12	AMORTIZATION OF CAPITALIZED BOND PREMIUMS	3,220	3,220
13	CAPITALIZATION ADJUSTMENT	(19,618)	(20,174)
14	AFUDC	(5,040)	(5,225)
15	NET INTEREST EXPENSE	183,135	179,170
16	TOTAL EXPENSES	688,176	690,966
17	NET REVENUES	8,710	12,235

TABLE 4.4B
TRANSMISSION REVENUE REQUIREMENT
REVISED REVENUE TEST
STATEMENT OF CASH FLOWS
($thousands)

		A FY 2002	B FY 2003
1	CASH FROM CURRENT OPERATIONS:		
2	NET REVENUES	8,710	12,235
3	EXPENSES NOT REQUIRING CASH:		
4	FEDERAL PROJECTS DEPRECIATION	182,694	195,358
5	AMORTIZATION OF CAPITALIZED BOND PREMIUMS	3,220	3,220
6	CAPITALIZATION ADJUSTMENT	(19,618)	(20,174)
7	ACCRUAL REVENUES (AC INTERTIE/FIBER)	(4,031)	(4,031)
8	CASH PROVIDED BY CURRENT OPERATIONS	170,975	186,608
9	CASH USED FOR CAPITAL INVESTMENTS:		
10	INVESTMENT IN:		
11	UTILITY PLANT	(252,300)	(248,416)
12	CASH USED FOR CAPITAL INVESTMENTS	(252,300)	(248,416)
13	CASH FROM TREASURY BORROWING AND APPROPRIATIONS:		
14	INCREASE IN LONG-TERM DEBT	252,300	248,416
15	REPAYMENT OF LONG-TERM DEBT	(124,226)	(124,233)
16	REPAYMENT OF CAPITAL APPROPRIATIONS	(23,913)	(26,247)
17	CASH FROM TREASURY BORROWING AND APPROPRIATIONS	104,161	97,936
18	ANNUAL INCREASE (DECREASE) IN CASH	22,836	36,128

TABLE 4.5
FEDERAL COLUMBIA RIVER TRANSMISSION SYSTEM
TRANSMISSION REVENUES FROM PROPOSED RATES
REVENUE REQUIREMENT AND REPAYMENT STUDY RESULTS THROUGH THE REPAYMENT PERIOD
($000)

YEAR COMBINED CUMULATIVE	A REVENUES (STATEMENT A)	B OPERATION & MAINTENANCE (STATEMENT E)	C PURCHASE AND EXCHANGE POWER (STATEMENT E)	D DEPRECIATION	E NET INTEREST (STATEMENT D)	F NET REVENUES (F=A-B-C-D-E)	G NONCASH EXPENSES 1/ (COLUMN D)	H FUNDS FROM OPERATION (H=F+G)	I AMORTIZATION (REV REQ STUDY DOC,V 2,C 3)	J IRRIGATION AMORTIZATION (STATEMENT C)	K NET POSITION (K=H-I-J)
1977	3,298,951	963,839	348,748	807,047	1,220,170	(40,853)	807,047	766,194	628,460		137,734
TRANSMISSION											
1978	116,430	69,767		51,503	60,337	(65,177)	51,503	(13,674)	194		(13,868)
1979	107,017	73,801		53,756	69,112	(89,652)	53,756	(35,896)	26		(35,922)
1980	170,603	77,594		55,613	78,039	(40,643)	55,613	14,970	2		14,968
1981	202,740	87,243		59,638	87,665	(31,806)	59,638	27,832	1,236 **2/**		26,596
1982	269,200	91,562		64,458	106,190	6,990	64,458	71,448	0		71,448
1983	359,641	99,520		67,969	138,268	53,884	67,969	121,853	0		121,853
1984	417,821	101,406		60,360	158,783	97,272	60,360	157,632	26,722 **3/**		130,910
1985	510,030	141,623		71,012	160,336	137,059	71,012	208,071	199,646		8,425
1986	446,435	144,438		77,574	178,460	45,963	77,574	123,537	180,915		(57,378)
1987	456,728	148,596		85,807	177,020	45,305	85,807	131,112	148,860		(17,748)
1988	405,154	167,102		90,076	164,131	(16,155)	90,076	73,921	44,757		29,164
1989	422,202	175,240		93,076	164,044	(10,158)	93,076	82,918	119,322		(36,404)
1990	426,855	183,512		98,881	153,440	(8,978)	98,881	89,903	99,460		(9,557)
1991	439,871	199,668		98,731	139,458	2,014	98,731	100,745	70,930		29,815
1992	428,769	209,868		101,946	143,789	(26,834)	101,946	75,112	190,864		(115,752)
1993	417,555	189,926		101,929	173,271	(47,571)	101,929	54,358	130,989		(76,631)
1994	462,511	202,309		103,956	179,052	(22,806)	103,956	81,150	55,977		25,173
1995	490,264	200,501		112,940	181,744	(4,921)	112,940	264,019 **/4**	281,789		(17,770)
1996	534,456	206,128		125,961	165,175	37,192	125,961	148,153 **/5**	155,000		(6,847)
1997	503,217	197,259		124,457	176,929	4,572	124,457	129,029	125,000		4,029
1998	539,925	228,803		125,130	174,022	11,970	79,448	91,418	185,955		(94,537)
1999	552,134	231,410		147,176	173,574	(26)	100,936	100,910	138,600		(37,690)
COST EVALUATION PERIOD											
2000	554,132	264,064		153,955	163,065	(26,952)	106,200	79,248	114,587		(35,339)
2001	564,166	270,138		153,955	172,193	(32,120)	105,963	73,843	59,060		14,783
RATE APPROVAL PERIOD											
2002	696,886	322,347		182,694	183,135	8,710	162,265	170,975	148,139		22,836
2003	703,201	316,438		195,358	179,170	12,235	174,373	186,608	150,480		36,128

REPAYMENT PERIOD	A REVENUES (STATEMENT A)	B OPERATION & MAINTENANCE (STATEMENT E)	C PURCHASE AND EXCHANGE POWER (STATEMENT E)	D DEPRECIATION	E NET INTEREST (STATEMENT D)	F NET REVENUES (F=A-B-C-D-E)	G NONCASH EXPENSES 1/ (COLUMN D)	H FUNDS FROM OPERATION (H=F+G)	I AMORTIZATION (REV REQ STUDY DOC,V 2,C 3)	J IRRIGATION AMORTIZATION (STATEMENT C)	K NET POSITION (K=H-I-J)
2004	703,201	316,438	(1,041)	195,358	186,471	5,975	174,373	180,348	150,650		29,698
2005	703,201	316,438	(1,073)	195,358	187,662	4,816	174,373	179,189	149,491		29,698
2006	703,201	316,438	(1,104)	195,358	186,857	5,652	174,373	180,025	150,327		29,698
2007	703,201	316,438	(1,134)	195,358	183,125	9,414	174,373	183,787	154,089		29,698
2008	703,201	316,438	(1,164)	195,358	183,456	9,113	174,373	183,486	153,788		29,698
2009	703,201	316,438	(1,193)	195,358	184,497	8,101	174,373	182,474	152,776		29,698
2010	703,201	316,438	(1,221)	195,358	183,158	9,468	174,373	183,841	154,143		29,698
2011	703,201	316,438	(1,249)	195,358	182,953	9,701	174,373	184,074	154,376		29,698
2012	703,201	316,438	(1,277)	195,358	183,262	9,420	174,373	183,793	154,095		29,698
2013	703,201	316,438	(1,303)	195,358	183,436	9,272	174,373	183,645	153,947		29,698
2014	703,201	316,438	(1,329)	195,358	183,708	9,026	174,373	183,399	153,701		29,698
2015	703,201	316,438	(1,355)	195,358	186,385	6,375	174,373	180,748	151,050		29,698
2016	703,201	316,438	(1,380)	195,358	191,282	1,503	174,373	175,876	146,178		29,698
2017	703,201	316,438	(1,404)	195,358	192,108	701	174,373	175,074	145,376		29,698
2018	703,201	316,438	(1,428)	195,358	193,248	(415)	174,373	173,958	144,260		29,698
2019	703,201	316,438	(1,451)	195,358	193,587	(731)	174,373	173,642	143,944		29,698
2020	703,201	316,438	(1,474)	195,358	198,150	(5,271)	174,373	169,102	139,404		29,698
2021	703,201	316,438	(1,496)	195,358	200,927	(8,026)	174,373	166,347	136,649		29,698
2022	703,201	316,438	(1,517)	195,358	203,879	(10,957)	174,373	163,416	133,718		29,698
2023	703,201	316,438	(1,538)	195,358	202,619	(9,676)	174,373	164,697	134,999		29,698
2024	703,201	316,438	(1,557)	195,358	211,412	(18,450)	174,373	155,923	126,225		29,698
2025	703,201	316,438	(1,576)	195,358	215,430	(22,449)	174,373	151,924	122,226		29,698
2026	703,201	316,438	(1,594)	195,358	219,808	(26,809)	174,373	147,564	117,866		29,698
2027	703,201	316,438	(1,613)	195,358	222,646	(29,628)	174,373	144,745	115,045		29,700
2028	703,201	316,438	(1,629)	195,358	225,304	(32,270)	174,373	142,103	112,405		29,698
2029	703,201	316,438	(1,644)	195,358	236,144	(43,095)	174,373	131,278	101,580		29,698
2030	703,201	316,438	(1,659)	195,358	241,583	(48,519)	174,373	125,854	96,156		29,698
2031	703,201	316,438	(1,674)	195,358	246,488	(53,409)	174,373	120,964	91,266		29,698
2032	703,201	316,438	(1,685)	195,358	253,308	(60,218)	174,373	114,155	84,457		29,698
2033	703,201	316,438	(1,696)	195,358	261,648	(68,547)	174,373	105,826	76,128		29,698
2034	703,201	316,438	(1,706)	195,358	270,337	(77,226)	174,373	97,147	67,449		29,698
2035	703,201	316,438	(1,715)	195,358	280,160	(87,040)	174,373	87,333	57,635		29,698
2036	703,201	316,438	(1,721)	195,358	290,329	(97,203)	174,373	77,170	47,472		29,698
2037	703,201	316,438	(1,727)	195,358	301,358	(108,226)	174,373	66,147	36,449		29,698
2038	703,201	316,438	(1,732)	195,358	313,277	(120,140)	174,373	54,233	24,535		29,698
TRANSMISSION TOTALS	35,809,978	15,675,593	(51,059)	9,495,441	11,480,404	(790,401)	8,531,883	7,882,482	4,760,908	0	1,020,117

1/CONSISTS OF DEPRECIATION PLUS ANY ACCOUNTING WRITE-OFFS INCLUDED IN EXPENSES.

2/CONSISTS OF AMORTIZATION ($1,650) AND DEFERRAL PAYMENT ($2,760).

3/CONSISTS OF AMORTIZATION ($1,342) AND DEFERRAL PAYMENT ($190,952).

4/INCREASED BY 156,000 AC INTERTIE CAPACITY OWNERSHIP PAYMENT.

5/REDUCED BY $15,000 OF REVENUE FINANCING.

5. REVENUE REQUIREMENT LEGAL REQUIREMENTS AND POLICIES

This chapter summarizes:

- the statutory framework that guides the development of BPA's transmission revenue requirement and the recovery of BPA's transmission costs and expenses among the various users of the Federal Columbia River Transmission System (FCRTS), and
- the repayment policies that BPA follows in the development of its revenue requirement.

5.1 Development of BPA's Revenue Requirements

BPA's revenue requirements are governed by four main legislative acts: The Bonneville Project Act of 1937, P.L. No. 75-329, 50 Stat. 731; the Flood Control Act of 1944, P.L. No. 78-534, 58 Stat. 890, amended 1977; the Federal Columbia River Transmission System Act (Transmission System Act) of 1974, P.L. No. 93-454, 88 Stat. 1376; and (Northwest Power Act), P.L. No. 96-501, 94 Stat. 2697. Other statutory provisions that guide the development of BPA's revenue requirements include the Federal Power Act, as amended by the Energy Policy Act of 1992 (EPA-92), P.L. No. 102-486. 106 Stat. 2776; and the Omnibus Consolidated Rescissions and Appropriations Act of 1996, P.L. No. 104-134, Stat. 132.

DOE Order "Power Marketing Administration Financial Reporting", RA6120.2, issued by the Secretary of Energy provides guidance to Federal power marketing agencies regarding repayment of the Federal investment. In addition, from time to time policies issued by the Federal Energy Regulatory Commission (FERC) provide guidance on transmission pricing.

5.1.1 Legal Requirement Governing BPA's Revenue Requirement. BPA constructs, operates, and maintains the FCRTS within the Pacific Northwest and makes improvements or replacements thereto as are appropriate and required to: (a) integrate and transmit electric power from existing or additional Federal or non-Federal generating units; (b) provide service to BPA customers; (c) provide inter-regional transmission facilities; and (d) maintain the electrical stability and reliability of the Federal system. Section 4 of the Federal Columbia River Transmission System Act (Transmission System Act), 16 U.S.C. §838b. Such transmission system was built to encourage the widest possible use of all electric energy. Section 2(b), Bonneville Project Act, 16 U.S.C. 832a(b).

BPA's rates must be set in a manner that ensures revenue levels sufficient to recover its costs. This requirement was first set forth in Section 7 of the Bonneville Project Act, 16 U.S.C. § 832f (as amended 1977) which provided that:

> *Rate schedules shall be drawn having regard to the recovery (upon the basis of the application of such rate schedules to the capacity of the electric facilities of the Bonneville project) of the cost of producing and transmitting such electric energy, including the amortization of the capital investment over a reasonable period of years.*

This cost recovery principle was repeated for Army reservoir projects in Section 5 of the -Flood Control Act of 1944, 16 U.S.C. 825s (as amended 1977). In 1974, Section 9 of the Transmission System Act, 16 U.S.C, § 838g, expanded the cost recovery principle so that BPA's rates would be set to also recover:

> *. . . payments provided [in the Administrator's annual budget], and (3) at levels to produce such additional revenues as may be required, in the aggregate with all other revenues of the Administrator, to pay when due the principal of, premiums, discounts, and expenses in connection with the issuance of and interest on all bonds issued and outstanding pursuant to [this Act,] and amounts required to establish and maintain reserve and other funds and accounts established in connection therewith.*

The Northwest Power Act reiterates and clarifies the cost recovery principle. Section 7(a)(1) of the Northwest Power Act, 16 U.S.C. § 839e(a)(1), provides that:

> *The Administrator shall establish, and periodically review and revise, rates for the sale and disposition of electric energy and capacity and for the transmission of non-Federal power. Such rates shall be established and, as appropriate, revised to recover, in accordance with sound business principles, the costs associated with the acquisition, conservation, and transmission of electric power, including the amortization of the Federal investment in the Federal Columbia River Power System (including irrigation costs required to be repaid out of power revenues) over a reasonable period of years and the other costs and expenses incurred by the Administrator pursuant to this Act and other provisions of law. Such rates shall be established in accordance with Sections 9 and 10 of the Federal Columbia River Transmission System Act (16 U.S.C. § 838), Section 5 of the Flood Control Act of 1944, and the provisions of this Chapter.*

The Northwest Power Act also provides that FERC's confirmation and approval of BPA rates shall assure that the revenue requirement is adequate to recover BPA's costs and ensure timely U.S. Treasury repayments. Section 7(a)(2), 16 U.S.C. § 839e(a)(2), provides:

> *Rates established under this section shall become effective only, except in the case of interim rules as provided in subsection (i)(6), upon confirmation and approval by the Federal Energy Regulatory Commission upon a finding by the Commission, that such rates:*
>
> *(A) are sufficient to assure repayment of the Federal investment in the Federal Columbia River Power System over a reasonable number of years after first meeting the Administrator's other costs.*
>
> *(B) are based upon the Administrator's total system costs; and*
>
> *(C) insofar as transmission rates are concerned, equitably allocate the costs of the Federal transmission system between Federal and non-Federal power utilizing such system.*

More recently, Congress amended the Federal Power Act to allow FERC to order a transmitting utility, including BPA, to provide transmission services (including the enlargement of transmission capacity necessary to provide such services) to an applicant. Section 211(a) of the Federal Power Act, 16 U.S.C. § 824j(a). In applying the Federal Power Act provisions to FERC-ordered transmission service on the FCRTS, section 212(i), 16 U.S.C. § 824k(i)(1)(B), provides that FERC shall assure that

> *(i) the provisions of otherwise applicable Federal laws shall continue in full force and effect and shall continue to be applicable to the system; and*
>
> *(ii) the rates for the transmission of electric power on the system shall be governed only by such otherwise applicable provisions of law and not by any provision of section 824i of this title, 824j of this title, this section, and section 824l of this title, except that no rate for the transmission of power on the system shall be unjust, unreasonable, or unduly discriminatory or preferential , as determined by the Commission.*

Development of the revenue requirement is a critical component of meeting the statutory cost recovery principles. The costs associated with FCRTS and associated services and expenses, as

well as other costs incurred by the Administrator in furtherance of BPA's mission, are included in the Revenue Requirement Study.

5.1.2 The BPA Appropriations Refinancing Act. As in the prior rate period, BPA's transmission rates for the FY 2002 - 2003 rate period will reflect the requirements of the Refinancing Act, part of the Omnibus Consolidated Rescissions and Appropriations Act of 1996, P.L. No. 104-134, 110 Stat. 1321, enacted in April 1996. The Refinancing Act required that unpaid principal on BPA appropriations ("old capital investments") at the end of FY 1996 be reset at the present value of the principal and annual interest payments BPA would make to the U.S. Treasury for these obligations absent the Refinancing Act, plus $100 million. 16 U.S.C. § 838l(b). The Refinancing Act also specified that the new principal amounts of the old capital investments be assigned new interest rates from the Treasury yield curve prevailing at the time of the refinancing transaction. 16 U.S.C. §838l(a)6)(A).

The Refinancing Act restricts prepayment of the new principal for old capital investments to $100 million during the first five years after the effective date of the financing. 16 U.S.C. § 838l(e). The Refinancing Act also specifies that repayment periods on new principal amounts may not be earlier than determined prior to the refinancing. 16 U.S.C. §838l(d).

The Refinancing Act also directs the Administrator to offer to provide assurance in new or existing power, transmission, or related service contracts that the Government would not increase the repayment obligations in the future. 16 U.S.C. §838l(i).

5.2 Repayment Requirements and Policies

5.2.1 Separate Repayment Studies. Section 10 of the Transmission System Act, 16 U.S.C. §838h, and section 7(a)(2)(C) of the Northwest Power Act, 16 U.S.C. §839e(a)(2)(C), provide that the recovery of the costs of the Federal transmission system shall be equitably allocated between Federal and non-Federal power utilizing such system. In 1982, FERC first directed BPA to provide accounting and repayment statements for its transmission system separate and apart from the accounting and repayment statements for the Federal generation system. *See* 20 FERC ¶61,142 (1982). FERC required BPA to establish books of account for the FCRTS separate from its generation costs; explained that the FCRTS shall be comprised of all investments, including administrative and management costs, related to the transmission of electric power; and directed BPA to develop repayment studies for its transmission function separate from its generation function that set forth the date of each investment, the repayment date and the amount repaid from transmission revenues. *See* 26 FERC ¶ 61,096 (1984). FERC approved BPA's methodology for separate repayment studies in 1984. 28 FERC ¶61,325 (1984).

BPA has prepared separate repayment studies for its transmission and generation functions since 1984. BPA has therefore developed the transmission revenue requirement with no change in this repayment policy.

5.2.2 Repayment Schedules. The statutes applicable to BPA do not include specific directives for scheduling repayment of old capital appropriations and bonds issued to Treasury other than a directive that the Federal investment be amortized over a reasonable period of years. BPA's repayment policy has largely been established through administrative interpretation of its statutory requirements, with Congressional encouragement and occasional admonishment.

There have been a number of changes in BPA's repayment policy over the years concurrent with expansion of the Federal system and changing conditions. In general, current repayment criteria were first approved by the Secretary of the Interior on April 3, 1963. These criteria were refined and submitted to the Secretary and the Federal Power Commission (the predecessor agency to FERC) in support of BPA's rate filing in September 1965.

The repayment policy was presented to Congress for its consideration for the authorization of the Grand Coulee Dam Third Powerhouse in June 1966. The underlying theory of repayment was discussed in the House of Representatives' Report related to authorization of this project, H.R. Rep. No. 1409, 89th Cong., 2d Sess. 9-10 (1966). As stated in that report:

> *Accordingly, in a repayment study there is no annual schedule of capital repayment. The test of the sufficiency of revenues is whether the capital investment can be repaid within the overall repayment period established for each power project, each increment of investment in the transmission system, and each block of irrigation assistance. Hence, repayment may proceed at a faster or slower pace from year-to-year as conditions change.*
>
> *This approach to repayment scheduling has the effect of averaging the year-to-year variations in costs and revenues over the repayment period. This results in a uniform cost per unit of power sold, and permits the maintenance of stable rates for extended periods. It also facilitates the orderly marketing of power and permits Bonneville Power Administration's customers, which include both electric utilities and electro-process industries, to plan for the future with assurance.*

The Secretary of the Interior issued a statement of power policy on September 30, 1970, setting forth general principles that reaffirmed the repayment policy as previously developed. The most pertinent of these principles are set forth in the Department of the Interior Manual, Park 730, Chapter 1:

A. *Hydroelectric power, although not a primary objective, will be proposed to Congress and supported for inclusion in multiple-purpose Federal projects when . . . it is capable of repaying its share of the Federal investment, including operation and maintenance costs and interest, in accordance with the law.*

B. *Electric power generated at Federal projects will be marketed at the lowest rates consistent with sound financial management. Rates for the sale of Federal electric power will be reviewed periodically to assure their sufficiency to repay operating and maintenance costs and the capital investment within 50 years with interest that more accurately reflects the cost of money.*

To achieve a greater degree of uniformity in a repayment policy for all Federal power marketing agencies, the Deputy Assistant Secretary of the Department of Interior (DOI) issued a memo on August 2, 1972, outlining: (1) a uniform definition of the commencement of the repayment period for a particular project; (2) the method for including future replacement costs in repayment studies; and (3) a provision that the investment or obligation bearing the highest interest rate shall be amortized first, to the extent possible, while still complying with the prescribed repayment period established for each increment of investment.

A further clarification of the repayment policy was outlined in a joint memo of January 7, 1974, from the Assistant Secretary for Reclamation and Assistant Secretary for Energy and Minerals. This memo states that in addition to meeting the overall objective of repaying the Federal investment or obligations within the prescribed repayment periods, revenues shall be adequate, except in unusual circumstances to repay annually all costs for O&M, purchased power, and interest.

On March 22, 1976, the Department of Interior issued Chapter 4 of Part 730 of the DOI Manual to codify financial reporting requirements for the Federal power marketing agencies. Included therein are standard policies and procedures for preparing system repayment studies.

BPA and other Federal power marketing agencies were transferred to the newly established Department of Energy (DOE)on October 1, 1977. See DOE Organization Act, 42 U.S.C. § 7101 et seq. (1994). The DOE adopted the policies set forth in Part 730 of the DOI Manual by issuing Interim Management Directive No. 1701 on September 28, 1977, which subsequently was replaced by RA 6120.2 on September 20, 1979, as amended on October 1, 1983.

The repayment policy outlined in RA 6120.2, paragraph 12, provides in that BPA's total revenues from all sources must be sufficient to:

1. Pay all annual costs of operating and maintaining the Federal system;

2. Pay the cost each fiscal year of obtaining power through purchase and exchange agreements, the cost for transmission services, and other costs during the year in which such costs are incurred;

3. Pay interest expense each year on the unamortized portion of the Federal investment financed with appropriated funds at the interest rates established for each Federal generating project and for each annual increment of such investment in the BPA transmission system, except that recovery of annual interest expense may be deferred in unusual circumstances for short periods of time.

4. Pay when due the interest and amortization portion on outstanding bonds sold to the U.S. Treasury;

5. Repay:
   a. each dollar of power investments and obligations in the Federal generating projects within 50 years after the projects become revenue producing, except as otherwise provided by law;
   b. each annual increment of Federal transmission investments and obligations within the average service life of such transmission facilities or within a maximum of 50 years, whichever is less.
   c. the cost of each replacement of the Federal system within its service life up to a maximum of 50 years; and

While RA 6120.2 allows repayment period of up to 50 years, BPA has set due dates at no more than 40 years to reflect expected service lives of new transmission investment. The Refinancing Act overrides provisions in RA 6120.2 related to determining interest during construction and assigning interest rates to Federal investments financed by appropriations. This Act also contains provisions on repayment periods (due dates) for the refinanced appropriations investments. The Refinancing Act is discussed in section 5.1.2 of this Study.

In addition, other sections within RA 6120.2 require that any outstanding deferred interest payments must be repaid before any planned amortization payments are made. Also, repayments are to be made by amortizing those Federal investments and obligations bearing the highest interest rate first, to the extent possible, while still completing repayment of each increment of Federal investment and obligation within its prescribed repayment period.

APPENDIX

THE REPAYMENT PROGRAM

1. REPAYMENT PROGRAM OPERATION

1.1. Purpose

The major purpose of the repayment program is to determine, consistent with applicable Federal statutes and RA 6120.2, whether a given set of annual revenues is sufficient to repay with interest the long-term investment and obligations of the FCRTS. The program calculates amortization and interest when determining the minimum revenue level necessary to recover these obligations.

1.2. Computation of Revenues Available for Interest and Amortization

Given a set of revenues and expenses for each year, a set of annual revenues available for interest and amortization can be obtained by subtracting non-investment-related expenses such as O&M expense from revenues (equation 1 below). This revenue subset can then be used to make interest expense and amortization payments on FCRTS-related appropriations and bonds.

(1) revenues available for interest and amortization$_i$ =

revenues$_i$ - expenses$_i$, i=1,2,...,n,

where n is the total number of years in the study.

1.3 Computation of Revenues Available for Amortization Payments

For each year, the revenues available for interest and amortization, less interest expense, are used to make amortization payments on the transmission obligations (equation 2 below). The repayment program recognizes the unique nature of each of the Federal investments and associated obligations. The program uses data for all specific investments. The project name, amount of principal, interest rate, in-service date, due date, and the nature of the investment are described for each investment.

(2) revenues available for interest and amortization$_i$ - interest expense$_i$ = $\sum_{j=1}^{m}$ amortization payment$_{ij}$, i=1,2,...n,

where m is the total number of Federal investments.

1.4. Computation of Principal Payments Given Due Dates

The amortization payments on each investment must total the investment's principal on or before its due date (equation 3):

(3) $\sum_{i=1}^{n}$ payment$_{ij}$ ≤ principal$_j$, j=1,2,...m.

1.5. Ordering of Payments According to Highest Interest First Constraint

The process described above yields one set of equations in which the payments are summed by year and another set of equations in which the payments are summed by investment. Taken together, however, these two sets of equations have no unique solution. RA 6120.2 provides that "[t]o the extent possible, while still complying with the repayment periods established for each increment of investment and unless otherwise indicated by legislation, amortization of the investment will be accompanied by application to the highest interest-bearing investment first."

A new equation can be obtained for each year by adding together equation 2 for that year and all earlier years. This equation sums all amortization payments made on any investment that comes due in those years. This equation can be simplified by substituting the principal of each such investment for the sum of the amortization payments on that investment as given by equation 3. The resulting equation (equation 4 below) indicates that for any year the sum of amortization payments on obligations that are not due by that year cannot exceed the sum of the revenues available for interest and amortization less the accumulated interest expense and the accumulated principal of all investments that are due in, or prior to, that year.

$$(4)\qquad \sum_{i=1}^{k} \text{revenues available for interest and amortization}_i - \sum_{i=1}^{k} \text{interest expense}_i - \sum_{\text{due}} \text{principal}_j = \sum_{\text{not due}} \sum_{i=1}^{k} \text{payment}_{ij}, \qquad k=1,2,...,n.$$

The term "due" refers to Federal obligations due to be repaid in or prior to the year k, and "not due" refers to Federal obligations not due to be repaid by the year k.

For each year in the repayment study, the right side of equation 4 represents the amount of the accumulated amortization payments on Federal obligations that are not due. The left side of the equation represents the accumulated revenues available for making these payments on the Federal obligations. These amortization payments will first be made on the highest interest bearing Federal obligations in compliance with RA 6120.2. If for some future year this amount is evaluated as being zero or negative, then this equation implies that amortization payments can be made only on highest interest bearing Federal obligations that come due on or before that year.

1.6. Iteration Towards A Solution

Equations 2 through 4 do not permit a direct solution. Although the revenues and the Federal obligation that are due are known for all years, an amortization payment made in the current year will affect interest expense in future years. That is, interest expense will no longer have to be paid on the portion of the Federal obligations that has been amortized. This problem is solved using an iterative approach.

The program initially assumes no future interest expense in evaluating the left side of the fourth set of equations. Consequently, the net revenues available for payments on Federal obligations that are not due, but bear the highest interest rates, will be excessive. As payments are determined for each successive year, and the interest expense of a given year is calculated, they are used in the fourth set of equations for all later years. The fourth set of equations is thus

modified, and the revenues available for payments on "not due" highest interest rate bearing Federal obligations are reduced. Therefore, the amortization of a Federal obligation on its due date, in order to satisfy equation 3, may violate equation 2. Equation 2 may be violated when a negative balance occurs. A negative balance will result when revenues available for interest and amortization are less than interest expense plus any amortization payments that are due. As a result, a second iteration is necessary.

In the second iteration, the interest expense developed in the first iteration is used in the fourth set of equations for future years. Since amortization payments on "not due" highest interest rate bearing Federal obligations were excessive in the first iteration, the interest expense developed in the first iteration will be less than the true interest expense. These estimates, however, are more accurate than an estimate of zero interest expense and, as a result, the negative balances will be reduced.

If revenues are sufficient to recover a set of annual expenses and to repay with interest BPA's long-term Federal obligations, then the interest expenses of successive iterations will converge and the negative balances will be reduced to zero and thus yield a solution. Under these conditions all four equations will be satisfied.

If revenues are insufficient, then compliance with the fourth set of equations will force amortization payments on the highest interest obligations to be delayed. This will cause an increase in interest expense, leaving less revenue available to amortize high interest obligations. The interest expense from successive iterations will diverge, and the negative balances will start increasing. Under these conditions no solution is possible given available revenues.

BPA does not deliberately plan to defer annual expenses in the future. Therefore, if revenues are insufficient to cover annual expenses for any year of the repayment period, the program decides that no solution is possible at that revenue level.

2. DETERMINING A SUFFICIENT REVENUE LEVEL

As noted above, the repayment program is also used to determine a minimum revenue level sufficient to meet a given set of repayment obligations.

A set of trial revenues can be obtained by multiplying a set of given revenues by a factor. A factor is an assigned real number. If the set of trial revenues obtained with a factor is found to be insufficient, then all lower factors are known to produce insufficient revenues. If some other factor is found to produce sufficient revenues, then all higher factors are known to produce sufficient revenues. Therefore, only intermediate factors need to be tested.

Testing any intermediate factor establishes one of two propositions: (1) that either it and all lower intermediate factors are excluded; or (2) that it and all higher intermediate factors are included. In this manner, the set of intermediate factors is reduced. Through this repeated testing (referred to as the binary search technique), the set of intermediate factors is reduced to a size determined by a preset tolerance limit (the tolerance level of the current study is set at .005 percent of the given revenues).

The lowest factor that is determined to produce sufficient revenues in accordance with this testing procedure will produce the minimum revenue level, within the accuracy of the program, that meets all repayment obligations with interest subject to the conditions specified in RA 6120.2 and relevant legislation.

3. TREATMENT OF BONDS ISSUED TO U.S. TREASURY

BPA's current long-term bonds issued to the U.S. Treasury consist of term bonds and callable bonds. The term bonds cannot be prepaid. Their amortization and the revenues required for such bonds are therefore excluded from the above calculations. The remaining bonds are callable bonds and have provisions that allow for early redemption before the maturity date—

five years after the date of the issuance on some older bonds and longer periods on some of the more recently issued bonds. In addition, a premium must be paid if a bond is repaid before its due date. The premium that must be paid decreases with the age of the bond. This premium affects the repayment process in two ways.

First, such premiums must be included with the payments of equation 2 and consequently affect the fourth set of equations. The premium that is paid on any Federal bond is considered to be due when the Federal bond is due. The premiums of one iteration are accumulated by due year and included in the fourth set of equations for the following iteration. When each premium is paid in the following iteration, it is used to modify the fourth set of equations and is also accumulated in case another iteration is necessary.

Second, the decrease in the premium that must be paid also affects the highest interest selection process. This effect is equivalent, in total, to a fixed premium and a reduced interest rate. This reduced effective interest rate enters into the comparison with other Federal investments and obligations to determine which should be repaid first.

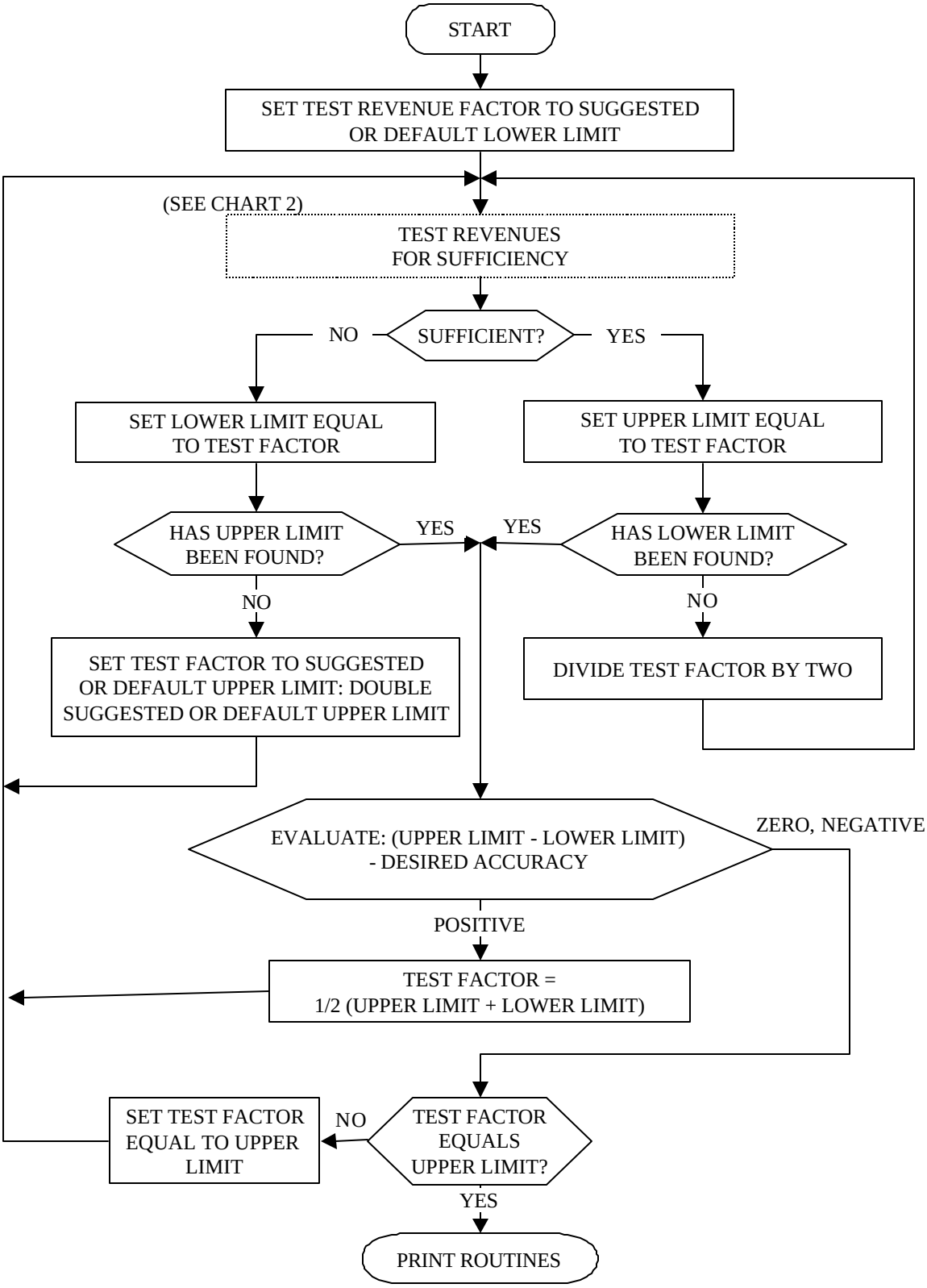
4. INTEREST INCOME

BPA is authorized by applicable legislation and RA 6120.2 to calculate interest income as a credit to interest expense. An interest income credit is computed within the repayment program based on the average cash balance of funds required to be collected for return to the U.S. Treasury in that year. The program assumes that the cash accumulates at a uniform rate throughout the year, except for interest paid on bonds issued to the U.S. Treasury at mid-year. At the end of the year the cash balance together with the interest credit earned thereon is used for payment of interest expense, amortization of the Federal investment and payment of bond premiums.

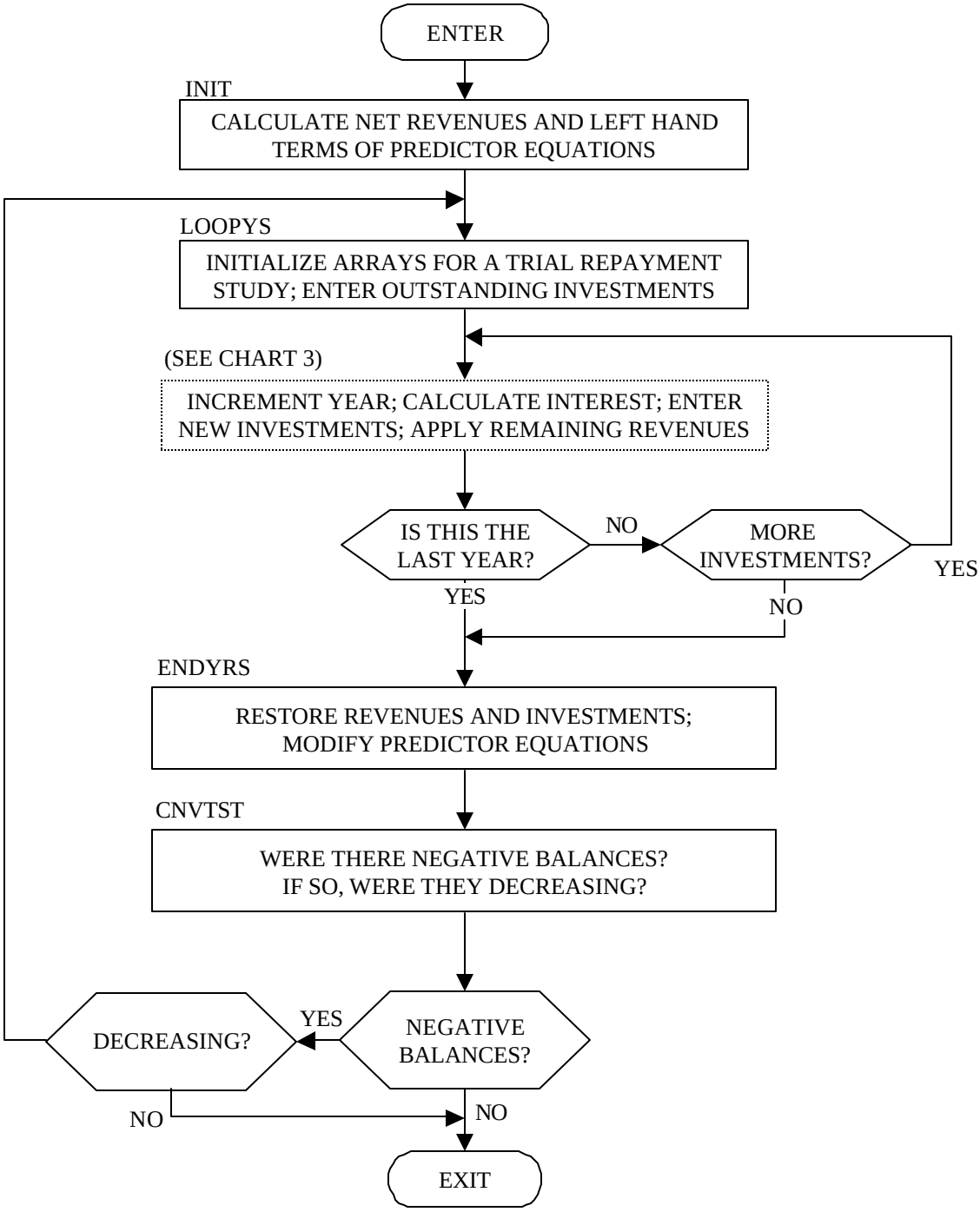
5. FLOW CHARTS

The following three pages contain flow charts associated with the repayment study program. The first chart shows the binary search process. The second chart shows the test for sufficiency. The third chart shows the application of revenues. See Chapter XX of Documentation for Revenue Requirement Study, TR-02-E-BPA-01A.

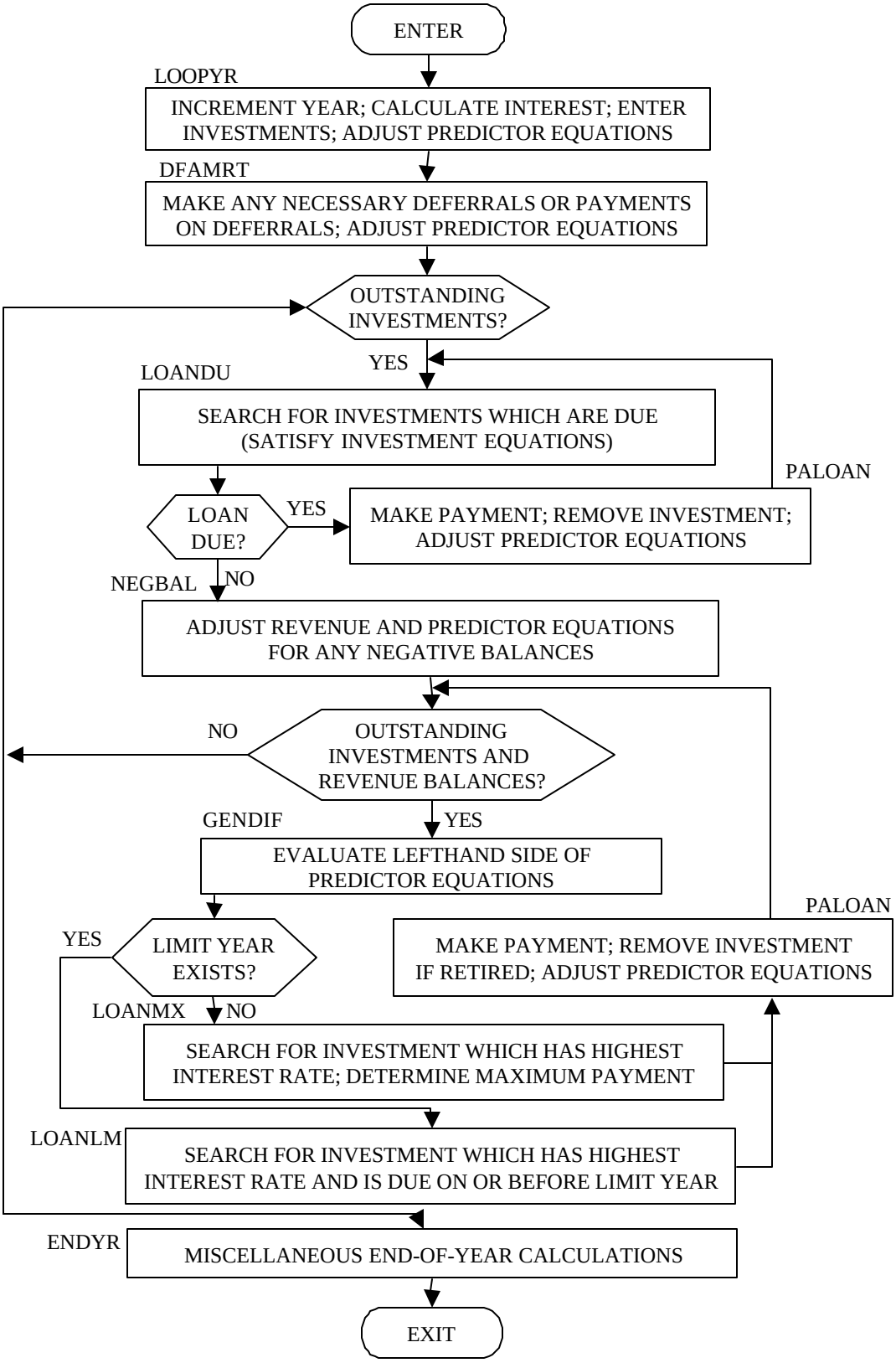
REPAYMENT PROGRAM
(BINARY SEARCH)
CHART 1



REPAYMENT PROGRAM
(TEST FOR SUFFICIENCY)
CHART 2



REPAYMENT PROGRAM
(APPLICATION OF REVENUES)
CHART 3



6. DESCRIPTION OF REPAYMENT PROGRAM TABLES

Table A.1 shows the amortization results from the Transmission repayment studies for FY 2002 and 2003, summarized by bonds and appropriations due and discretionary, by year.

Tables A.2 through A.3, A through D, show the results from the Transmission repayment studies for FY 2002 and 2003, respectively, using revenues from current rates. Table A.4 provides the application of amortization through the repayment period for transmission based upon the revenues forecast using current rates.

Tables A.2A and A.3A display the repayment program results for transmission for FY 2002 and 2003. Column A shows the applicable fiscal year. Column B shows the total investment costs of the transmission projects through the cost evaluation period. *See* Chapter 4 of Documentation for Revenue Requirement Study, TR-02-E-BPA-01A. In Column C, forecasted replacements required to maintain the system are displayed through the repayment period. *See* Chapter 11 of Documentation for Revenue Requirement Study, TR-02-E-BPA-01A. Column D shows the cumulative dollar amount of the transmission investment placed in service. This is comprised of historical plant-in-service, planned replacements and additions to plant through the cost evaluation period, and replacements from the end of the cost evaluation period to the end of the repayment study period. For these studies all additional plant is assumed to be financed by bonds.

In Column E scheduled amortization payments for transmission are displayed for each year of the repayment period. Unamortized transmission obligations, shown in column G, are determined by taking the previous year's unamortized amount, adding any replacements and subtracting amortization.

Tables A.2B and A.3B display planned principal payments by fiscal year for Federal transmission obligations. Shown on these tables are the principal payments associated with appropriations and BPA bonds.

Tables A.2C and A.3C show the planned interest payments by fiscal year for Federal transmission obligations. Shown on these tables are the interest payments associated with appropriations and BPA bonds.

Tables A.2D and A.3D compare the schedule of unamortized Federal transmission obligations resulting from the transmission repayment studies to those obligations that are due and must be paid for each year of the repayment period. Column D shows unamortized obligations and is identical to the data shown in Column G of Tables A.2A and A.3A. Column E shows obligations that are due for each year. It should be noted that obligations are always less than the term schedule, indicating that planned repayments are in excess of repayment obligations, thereby satisfying repayment requirements. (The total of Unamortized Investment need not be zero at the end of the repayment period because of the replacements occurring subsequent to the cost evaluation period.)

Table A.4 lists by year through the 35-year repayment period the application of the transmission amortization payments, consistent with the revised repayment studies, by project. The projected annual amortization payments on the transmission obligations are identified by the project name, in-service date, due date, and interest rate. The amount of the obligation is shown as both the original gross amount due and the net amount after all prior amortization payments.

TABLE A.1

TRANSMISSION AMORTIZATION
REPAYMENT STUDY FOR INITIAL PROPOSAL 2002
FY 2002-2003
(000s)

Maturing/Due		
Bonds		
	2002	40,000
	2003	94,378
		134,378
Appropriations		
	2002	23,913
	2003	26,247
		50,160
TOTAL DUE		**184,538**

Scheduled But Not Yet Due		
Bonds		
	2002	84,226
	2003	32,509
		116,735
Appropriations		
	2002	0
	2003	0
		0
TOTAL DUE		**116,735**

Total by Year		
Bonds		
	2002	124,226
	2003	126,887
		251,113
Appropriations		
	2002	23,913
	2003	26,247
		50,160
TOTAL AMORTIZATION	2002	**148,139**
	2003	**153,134**
		301,273

2B
FY 2002

F E D E R A L C O L U M B I A R I V E R P O W E R S Y S T E M
REPAYMENT STUDY
(ALL AMOUNTS IN $1000)
TRANSMISSION

TABLE A.2A

A	B	C	D	E	F	G
			INVESTMENT PLACED IN SERVICE			
FISCAL YEAR ENDING SEPT 30	INITIAL 1/ PROJECT THRU 9-30	+ REPLACE-MENTS THRU 9-30	= CUMULATIVE AMOUNT IN SERVICE	- AMORTI-ZATION 9-30	- DISCRETIONARY AMORTIZATION	= UNAMORTIZED INVESTMENT
CUMULATIVE						
1999	4,178,608	981,077	5,159,685	2,465,107		2,694,578
2000	264,519		5,424,204	114,587		2,844,510
2001	210,690		5,634,894	59,064		2,996,136
2002	242,232		5,877,126	148,143		3,090,225
2003		131,031	6,008,157	150,485		3,070,771
2004		134,500	6,142,657	150,584		3,054,687
2005		137,907	6,280,564	149,555		3,043,039
2006		141,220	6,421,784	150,379		3,033,880
2007		144,361	6,566,145	154,128		3,024,113
2008		147,185	6,713,330	153,809		3,017,489
2009		149,676	6,863,006	152,786		3,014,379
2010		151,745	7,014,751	154,118		3,012,006
2011		153,671	7,168,422	154,320		3,011,357
2012		155,624	7,324,046	154,005		3,012,976
2013		157,621	7,481,667	153,817		3,016,780
2014		159,659	7,641,326	153,524		3,022,915
2015		161,838	7,803,164	150,958		3,033,795
2016		164,101	7,967,265	145,906		3,051,990
2017		166,388	8,133,653	144,229		3,074,149
2018		168,744	8,302,397	142,013		3,100,880
2019		171,064	8,473,461	140,110		3,131,834
2020		173,341	8,646,802	137,925		3,167,250
2021		175,513	8,822,315	135,442		3,207,321
2022		177,527	8,999,842	132,654		3,252,194
2023		179,416	9,179,258	134,478		3,297,132
2024		181,175	9,360,433	125,291		3,353,016
2025		182,756	9,543,189	121,446		3,414,326
2026		184,282	9,727,471	117,237		3,481,371
2027		185,836	9,913,307	115,078		3,552,129
2028		187,376	10,100,683	112,428		3,627,077
2029		188,951	10,289,634	104,051		3,711,977
2030		190,615	10,480,249	98,701		3,803,891
2031		192,307	10,672,556	92,128		3,904,070
2032		194,003	10,866,559	84,977		4,013,096
2033		195,708	11,062,267	76,658		4,132,146
2034		197,431	11,259,698	67,991		4,261,586
2035		199,086	11,458,784	58,312		4,402,360
2036		200,628	11,659,412	48,253		4,554,735
2037		202,041	11,861,453	37,355		4,719,421
TOTALS	4,896,049	6,965,404		7,142,032		

1/ GROSS INITIAL PROJECT INVESTMENT, RETIREMENTS INCLUDED

F E D E R A L C O L U M B I A R I V E R P O W E R S Y S T E M

REPAYMENT STUDY
(ALL AMOUNTS IN $1000)
PRINCIPAL PAYMENTS

A	B	C	D	E	F	G	H	I	J
FISCAL	BONNEVILLE POWER ADMINISTRATION				CORPS OF ENGINEERS		BUREAU OF RECLAMATION		
YEAR	APPROPRIATIONS		BONDS		APPROPRIATIONS		APPROPRIATIONS		IRRIGATION
ENDING SEPT 30	TRANS	GEN	TRANS	CONS & GEN	TRANS	GEN 1/	TRANS	GEN	AMORTIZATION
2002	23,913		124,230						
2003	26,247		124,238						
2004	56,163		94,421						
2005	7,816		141,739						
2006	15,739		134,640						
2007	24,474		129,654						
2008	10,913		142,896						
2009	47,545		105,241						
2010	142,018		12,100						
2011	114,320		40,000						
2012	114,005		40,000						
2013	153,817								
2014	93,524		60,000						
2015	99,890		51,068						
2016			145,906						
2017			144,229						
2018			142,013						
2019			140,110						
2020			137,925						
2021			135,442						
2022			132,654						
2023			134,478						
2024			125,291						
2025			121,446						
2026			117,237						
2027			115,078						
2028			112,428						
2029			104,051						
2030			98,701						
2031			92,128						
2032			84,977						
2033			76,658						
2034			67,991						
2035			58,312						
2036			48,253						
2037			37,355						
TOTALS	930,384		3,572,890						

LEGEND TRANS = TRANSMISSION
GEN = GENERATION
CONS = CONSERVATION

1/ INCLUDES PAYMENTS FOR LOWER SNAKE FISH & WILDLIFE

FY 2002

F E D E R A L C O L U M B I A R I V E R P O W E R S Y S T E M
REPAYMENT STUDY
(ALL AMOUNTS IN $1000)

INTEREST PAYMENTS

A	B	C	D	E	F	G	H	I
FISCAL	BONNEVILLE POWER ADMINISTRATION				CORPS OF ENGINEERS		BUREAU OF RECLAMATION	
YEAR ENDING SEPT 30	APPROPRIATIONS		BONDS 1/ TRANS	CONS & GEN	APPROPRIATIONS TRANS	GEN2/	APPROPRIATIONS TRANS	GEN
2002	66,904		143,126					
2003	65,280		143,417					
2004	63,484		145,146					
2005	59,459		150,232					
2006	58,919		149,979					
2007	57,825		147,354					
2008	56,117		149,411					
2009	55,352		151,228					
2010	51,909		153,367					
2011	41,615		163,487					
2012	33,337		172,108					
2013	25,093		180,566					
2014	13,978		192,000					
2015	7,213		201,357					
2016			213,647					
2017			215,348					
2018			217,588					
2019			219,514					
2020			221,722					
2021			224,227					
2022			227,036					
2023			225,233					
2024			234,439					
2025			238,303					
2026			242,530					
2027			244,703					
2028			247,374					
2029			255,766					
2030			261,131					
2031			267,719					
2032			274,881					
2033			283,211					
2034			291,888					
2035			301,576					
2036			311,641					
2037			322,545					
TOTALS	656,485		7,784,800					

LEGEND

TRANS = TRANSMISSION
GEN = GENERATION
CONS = CONSERVATION

1/ NET OF INTEREST INCOME AND AFUDC
2/ INCLUDES PAYMENTS FOR LOWER SNAKE FISH & WILDLIFE

FY 2002

F E D E R A L C O L U M B I A R I V E R P O W E R S Y S T E M
REPAYMENT STUDY
(ALL AMOUNTS IN $1000)

A	B	C	D	E
FISCAL YEAR ENDING SEPT 30	GENERATION UNAMORTIZED INVESTMENT	GENERATION TERM SCHEDULE	TRANSMISSION UNAMORTIZED INVESTMENT	TRANSMISSION TERM SCHEDULE
CUMULATIVE				
1999			2,694,578	4,214,055
2000			2,844,510	4,348,664
2001			2,996,136	4,457,560
2002			3,090,225	4,635,879
2003			3,070,771	4,646,285
2004			3,054,687	4,707,565
2005			3,043,039	4,757,656
2006			3,033,880	4,813,137
2007			3,024,113	4,821,770
2008			3,017,489	4,842,742
2009			3,014,379	4,909,829
2010			3,012,006	5,023,147
2011			3,011,357	5,113,578
2012			3,012,976	5,187,897
2013			3,016,780	5,218,608
2014			3,022,915	5,127,904
2015			3,033,795	5,054,752
2016			3,051,990	4,974,878
2017			3,074,149	4,829,870
2018			3,100,880	4,773,199
2019			3,131,834	4,786,811
2020			3,167,250	4,877,310
2021			3,207,321	4,989,586
2022			3,252,194	5,073,034
2023			3,297,132	5,145,850
2024			3,353,016	5,327,025
2025			3,414,326	5,394,848
2026			3,481,371	5,579,130
2027			3,552,129	5,764,966
2028			3,627,077	5,789,942
2029			3,711,977	5,878,893
2030			3,803,891	5,959,508
2031			3,904,070	6,136,492
2032			4,013,096	6,022,215
2033			4,132,146	6,067,923
2034			4,261,586	6,006,954
2035			4,402,360	6,016,447
2036			4,554,735	6,015,471
2037			4,719,421	5,984,327

2B
FY 2003

F E D E R A L C O L U M B I A R I V E R P O W E R S Y S T E M
REPAYMENT STUDY
(ALL AMOUNTS IN $1000)
TRANSMISSION

TABLE A.3A

A	B	C	D	E	F	G
	INVESTMENT PLACED IN SERVICE					
FISCAL YEAR ENDING SEPT 30	INITIAL 1/ PROJECT THRU 9-30	+ REPLACE-MENTS THRU 9-30	= CUMULATIVE AMOUNT IN SERVICE	- AMORTI-ZATION 9-30	- DISCRETIONARY AMORTIZATION	= UNAMORTIZED INVESTMENT
CUMULATIVE						
1999	4,178,608	981,077	5,159,685	2,465,107		2,694,578
2000	264,519		5,424,204	143,004		2,816,093
2001	210,690		5,634,894	137,096		2,889,687
2002	242,232		5,877,126	135,772		2,996,147
2003	248,405		6,125,531	155,315		3,089,237
2004		137,969	6,263,500	152,892		3,074,314
2005		141,467	6,404,967	149,763		3,066,018
2006		144,854	6,549,821	150,620		3,060,252
2007		148,057	6,697,878	154,404		3,053,905
2008		150,933	6,848,811	154,126		3,050,712
2009		153,462	7,002,273	153,228		3,050,946
2010		155,555	7,157,828	154,553		3,051,948
2011		157,500	7,315,328	154,801		3,054,647
2012		159,468	7,474,796	154,546		3,059,569
2013		161,479	7,636,275	154,415		3,066,633
2014		163,526	7,799,801	153,943		3,076,216
2015		165,720	7,965,521	147,469		3,094,467
2016		168,004	8,133,525	146,536		3,115,935
2017		170,318	8,303,843	145,646		3,140,607
2018		172,710	8,476,553	145,627		3,167,690
2019		175,079	8,651,632	142,373		3,200,396
2020		177,412	8,829,044	139,164		3,238,644
2021		179,650	9,008,694	136,550		3,281,744
2022		181,731	9,190,425	133,622		3,329,853
2023		183,690	9,374,115	134,991		3,378,552
2024		185,513	9,559,628	126,129		3,437,936
2025		187,148	9,746,776	122,142		3,502,942
2026		188,720	9,935,496	117,789		3,573,873
2027		190,316	10,125,812	114,959		3,649,230
2028		191,894	10,317,706	112,408		3,728,716
2029		193,510	10,511,216	101,517		3,820,709
2030		195,226	10,706,442	95,561		3,920,374
2031		196,977	10,903,419	91,110		4,026,241
2032		198,732	11,102,151	84,560		4,140,413
2033		200,499	11,302,650	76,206		4,264,706
2034		202,283	11,504,933	67,536		4,399,453
2035		203,993	11,708,926	57,665		4,545,781
2036		205,585	11,914,511	47,507		4,703,859
2037		207,045	12,121,556	36,490		4,874,414
2038		208,379	12,329,935	24,557		5,058,236
TOTALS	5,144,454	7,185,481		7,271,699		

1/ GROSS INITIAL PROJECT INVESTMENT, RETIREMENTS INCLUDED

2C
FY 2003

F E D E R A L C O L U M B I A R I V E R P O W E R S Y S T E M
REPAYMENT STUDY
(ALL AMOUNTS IN $1000)
PRINCIPAL PAYMENTS

A	B	C	D	E	F	G	H	I	J
FISCAL	BONNEVILLE POWER ADMINISTRATION				CORPS OF ENGINEERS		BUREAU OF RECLAMATION		
YEAR	APPROPRIATIONS		BONDS		APPROPRIATIONS		APPROPRIATIONS		IRRIGATION
ENDING SEPT 30	TRANS	GEN	TRANS	CONS & GEN	TRANS	GEN 1/	TRANS	GEN	AMORTIZATION
2003	60,937		94,378						
2004	96,692		56,200						
2005	7,816		141,947						
2006	15,739		134,881						
2007	24,474		129,930						
2008	10,913		143,213						
2009	49,029		104,199						
2010	142,453		12,100						
2011	114,801		40,000						
2012	114,546		40,000						
2013	154,415								
2014	88,659		65,284						
2015			147,469						
2016			146,536						
2017			145,646						
2018			145,627						
2019			142,373						
2020			139,164						
2021			136,550						
2022			133,622						
2023			134,991						
2024			126,129						
2025			122,142						
2026			117,789						
2027			114,959						
2028			112,408						
2029			101,517						
2030			95,561						
2031			91,110						
2032			84,560						
2033			76,206						
2034			67,536						
2035			57,665						
2036			47,507						
2037			36,490						
2038			24,557						
0TOTALS	880,474		3,510,246						

LEGEND

TRANS = TRANSMISSION
GEN = GENERATION
CONS = CONSERVATION

1/ INCLUDES PAYMENTS FOR LOWER SNAKE FISH & WILDLIFE

TABLE A.3B

2E
FY 2003

F E D E R A L C O L U M B I A R I V E R P O W E R S Y S T E M
REPAYMENT STUDY
(ALL AMOUNTS IN $1000)
INTEREST PAYMENTS

A	B	C	D	E	F	G	H	I
FISCAL	BONNEVILLE POWER ADMINISTRATION				CORPS OF ENGINEERS		BUREAU OF RECLAMATION	
YEAR	APPROPRIATIONS		BONDS 1/		APPROPRIATIONS		APPROPRIATIONS	
ENDING SEPT 30	TRANS	GEN	TRANS	CONS & GEN	TRANS	GEN 2/	TRANS	GEN
2003	63,384		140,261					
2004	59,060		148,049					
2005	52,083		158,187					
2006	51,543		157,901					
2007	50,449		155,241					
2008	48,741		157,257					
2009	47,976		158,949					
2010	44,427		161,201					
2011	34,116		171,292					
2012	25,808		179,883					
2013	17,541		188,307					
2014	6,401		199,945					
2015			212,846					
2016			213,804					
2017			214,718					
2018			214,761					
2019			218,038					
2020			221,270					
2021			223,906					
2022			226,855					
2023			225,507					
2024			234,388					
2025			238,394					
2026			242,765					
2027			245,614					
2028			248,181					
2029			259,087					
2030			265,058					
2031			269,524					
2032			276,085					
2033			284,450					
2034			293,130					
2035			303,010					
2036			313,174					
2037			324,197					
2038			336,135					
TOTALS	501,529		8,081,370					

LEGEND

TRANS = TRANSMISSION
GEN = GENERATION
CONS = CONSERVATION

1/ NET OF INTEREST INCOME AND AFUDC
2/ INCLUDES PAYMENTS FOR LOWER SNAKE FISH & WILDLIFE

2H
FY 2003

F E D E R A L C O L U M B I A R I V E R P O W E R S Y S T E M
REPAYMENT STUDY
(ALL AMOUNTS IN $1000)

A	B	C	D	E
FISCAL YEAR ENDING SEPT 30	GENERATION UNAMORTIZED INVESTMENT	GENERATION TERM SCHEDULE	TRANSMISSION UNAMORTIZED INVESTMENT	TRANSMISSION TERM SCHEDULE
CUMULATIVE				
1999			2,694,578	4,214,055
2000			2,816,093	4,348,664
2001			2,889,687	4,457,560
2002			2,996,147	4,635,879
2003			3,089,237	4,763,659
2004			3,074,314	4,828,408
2005			3,066,018	4,882,059
2006			3,060,252	4,941,174
2007			3,053,905	4,953,503
2008			3,050,712	4,978,223
2009			3,050,946	5,049,096
2010			3,051,948	5,166,224
2011			3,054,647	5,260,484
2012			3,059,569	5,338,647
2013			3,066,633	5,373,216
2014			3,076,216	5,286,379
2015			3,094,467	5,217,109
2016			3,115,935	5,141,138
2017			3,140,607	5,000,060
2018			3,167,690	4,938,081
2019			3,200,396	4,955,708
2020			3,238,644	5,050,278
2021			3,281,744	5,166,691
2022			3,329,853	5,254,343
2023			3,378,552	5,331,433
2024			3,437,936	5,516,946
2025			3,502,942	5,589,161
2026			3,573,873	5,777,881
2027			3,649,230	5,968,197
2028			3,728,716	5,997,691
2029			3,820,709	6,091,201
2030			3,920,374	6,176,427
2031			4,026,241	6,358,081
2032			4,140,413	6,248,533
2033			4,264,706	6,299,032
2034			4,399,453	6,242,915
2035			4,545,781	6,257,315
2036			4,703,859	6,261,296
2037			4,874,414	6,235,156
2038			5,058,236	6,204,404

Table A.4

Application of Amortization
Transmission
FY 2003 Repayment Study

APPLICATION OF AMORTIZATION TRANSMISSION FY 2003 REPAYMENT STUDY FOR TRANSMISSION INITIAL PROPOSAL 2002 RA

YEAR ----------INVESTMENT PAID----------

(ALL AMOUNT IN $1000)

YEAR	PROJECT	IN-SERVICE	DUE	GROSS	NET	RATE	REPLACEMENT	AMOUNT
2000	BPA PROGRAM	1992	2000	92,125	92,125	.06600		92,125
	BONNEVILLE POWER ADMINISTRATION	1955	2000	11,827	11,827	.06620		11,827
	BONNEVILLE POWER ADMINISTRATION	1955	2000	10,283	10,283	.06620	R	10,283
	BPA PROGRAM	1990	2030	1,149	1,149	.09250		352
	TOTAL							114,587
2001	BONNEVILLE POWER ADMINISTRATION	1956	2001	14,573	14,573	.06710		14,573
	BONNEVILLE POWER ADMINISTRATION	1956	2001	32,221	32,221	.06710	R	32,221
	BPA PROGRAM	1990	2030	1,149	797	.09250		797
	BPA PROGRAM	1990	2030	3,824	3,824	.09250	R	3,824
	BPA PROGRAM	1990	2030	41,894	41,894	.09250		7,649
	TOTAL							59,064
2002	BONNEVILLE POWER ADMINISTRATION	1957	2002	7,933	7,933	.06790		7,933
	BPA PROGRAM	1999	2002	40,000	40,000	.06200		40,000
	BONNEVILLE POWER ADMINISTRATION	1957	2002	15,980	15,980	.06790	R	15,980
	BPA PROGRAM	1990	2030	41,894	34,245	.09250		34,245
	BPA PROGRAM	1990	2030	29	29	.09250		29
	BPA PROGRAM	1990	2030	96	96	.09250	R	96
	BPA PROGRAM	1990	2030	3,008	3,008	.09250		3,008
	BPA PROGRAM	1995	2025	41,491	41,491	.07700		41,491
	BPA PROGRAM	1995	2025	65,000	65,000	.07700		5,357
	TOTAL							148,139
2003	BPA PROGRAM	1996	2003	50,000	50,000	.05900		50,000
	BPA PROGRAM	1996	2003	4,378	4,378	.05900		4,378
	BPA PROGRAM	2000	2003	40,000	40,000	.06400		40,000
	BONNEVILLE POWER ADMINISTRATION	1958	2003	15,593	15,593	.06840		15,593
	BONNEVILLE POWER ADMINISTRATION	1958	2003	10,654	10,654	.06840	R	10,654
	BPA PROGRAM	1995	2025	65,000	59,643	.07700		32,509
	TOTAL							153,134
2004	BPA PROGRAM	1999	2004	26,200	26,200	.05950		26,200
	BPA PROGRAM	1997	2004	30,000	30,000	.06800		30,000
	BONNEVILLE POWER ADMINISTRATION	1959	2004	8,157	8,157	.06880		8,157
	BONNEVILLE POWER ADMINISTRATION	1959	2004	8,863	8,863	.06880	R	8,863
	BPA PROGRAM	1995	2025	65,000	27,134	.07700		27,134
	BPA PROGRAM	1995	2025	8,442	8,442	.07700		8,442
	BONNEVILLE POWER ADMINISTRATION	1971	2016	17,805	17,805	.07290	R	17,805
	BONNEVILLE POWER ADMINISTRATION	1971	2016	12,051	12,051	.07290		12,051
	BONNEVILLE POWER ADMINISTRATION	1971	2016	17,766	17,766	.07290	R	11,998
	TOTAL							150,650

2005	BPA PROGRAM	1997	2005	80,000	80,000	.06900		80,000
	BONNEVILLE POWER ADMINISTRATION	1960	2005	3,598	3,598	.06910		3,598
	BONNEVILLE POWER ADMINISTRATION	1960	2005	4,218	4,218	.06910	R	4,218
	BPA PROGRAM	2000	2035	189,593	189,593	.07540		61,675
	TOTAL							149,491
2006	BPA PROGRAM	1996	2006	70,000	70,000	.07050		70,000
	BONNEVILLE POWER ADMINISTRATION	1961	2006	4,468	4,468	.06950		4,468
	BONNEVILLE POWER ADMINISTRATION	1961	2006	11,271	11,271	.06950	R	11,271
	BPA PROGRAM	2000	2035	189,593	127,918	.07540		64,588
	TOTAL							150,327
2007	BPA PROGRAM	1997	2007	111,254	111,254	.06650		111,254
	BONNEVILLE POWER ADMINISTRATION	1962	2007	19,597	19,597	.06980		19,597
	BONNEVILLE POWER ADMINISTRATION	1962	2007	4,877	4,877	.06980	R	4,877
	BPA PROGRAM	2000	2035	189,593	63,330	.07540		18,361
	TOTAL							154,089
2008	BPA PROGRAM	1998	2008	40,000	40,000	.05750		40,000
	BPA PROGRAM	1998	2008	75,300	75,300	.06000		75,300
	BONNEVILLE POWER ADMINISTRATION	1963	2008	904	904	.07020		904
	BONNEVILLE POWER ADMINISTRATION	1963	2008	803	803	.07020	R	803
	BONNEVILLE POWER ADMINISTRATION	1963	2008	4,876	4,876	.07020		4,876
	BONNEVILLE POWER ADMINISTRATION	1963	2008	4,330	4,330	.07020	R	4,330
	BPA PROGRAM	2000	2035	189,593	44,969	.07540		27,575
	TOTAL							153,788
2009	BONNEVILLE POWER ADMINISTRATION	1964	2009	4,151	4,151	.07060		4,151
	BPA PROGRAM	1998	2009	72,700	72,700	.06000		72,700
	BONNEVILLE POWER ADMINISTRATION	1964	2009	5,738	5,738	.07060	R	5,738
	BPA PROGRAM	2000	2035	189,593	17,394	.07540		17,394
	BPA PROGRAM	2000	2031	15,323	15,323	.07540		15,323
	BONNEVILLE POWER ADMINISTRATION	1971	2016	17,766	5,768	.07290	R	5,768
	BONNEVILLE POWER ADMINISTRATION	1971	2016	12,025	12,025	.07290		12,025
	BONNEVILLE POWER ADMINISTRATION	1972	2017	2,873	2,873	.07290	R	2,873
	BONNEVILLE POWER ADMINISTRATION	1972	2017	3,980	3,980	.07290		3,980
	BONNEVILLE POWER ADMINISTRATION	1972	2017	21,170	21,170	.07290	R	12,824
	TOTAL							152,776
2010	FISH, WILDLIFE & ENVIRONMENTAL	1995	2010	12,100	12,100	.07200		12,100
	BONNEVILLE POWER ADMINISTRATION	1965	2010	3,706	3,706	.07090		3,706
	BONNEVILLE POWER ADMINISTRATION	1965	2010	7,248	7,248	.07090	R	7,248
	BONNEVILLE POWER ADMINISTRATION	1965	2010	5,202	5,202	.07090		5,202
	BONNEVILLE POWER ADMINISTRATION	1965	2010	10,171	10,171	.07090	R	10,171
	BONNEVILLE POWER ADMINISTRATION	1972	2017	21,170	8,346	.07290	R	8,346
	BONNEVILLE POWER ADMINISTRATION	1972	2017	29,326	29,326	.07290		29,326
	BONNEVILLE POWER ADMINISTRATION	1973	2018	10,491	10,491	.07280	R	10,491
	BONNEVILLE POWER ADMINISTRATION	1973	2018	16,368	16,368	.07280		16,368
	BONNEVILLE POWER ADMINISTRATION	1973	2018	21,656	21,656	.07280	R	21,656
	BONNEVILLE POWER ADMINISTRATION	1973	2018	33,788	33,788	.07280		29,529
	TOTAL							154,143

2011	BONNEVILLE POWER ADMINISTRATION	1966	2011	11,830	11,830	.07130		11,830
	BPA PROGRAM	1998	2011	40,000	40,000	.06200		40,000
	BONNEVILLE POWER ADMINISTRATION	1966	2011	6,647	6,647	.07130		6,647
	BONNEVILLE POWER ADMINISTRATION	1966	2011	1,714	1,714	.07130	R	1,714
	BONNEVILLE POWER ADMINISTRATION	1966	2011	3,049	3,049	.07130	R	3,049
	BONNEVILLE POWER ADMINISTRATION	1973	2018	33,788	4,259	.07280		4,259
	BONNEVILLE POWER ADMINISTRATION	1970	2015	3,003	3,003	.07270	R	3,003
	BONNEVILLE POWER ADMINISTRATION	1970	2015	24,412	24,412	.07270		24,412
	BONNEVILLE POWER ADMINISTRATION	1970	2015	7,995	7,995	.07270	R	7,995
	BONNEVILLE POWER ADMINISTRATION	1970	2015	64,977	64,977	.07270		51,467
	TOTAL							154,376
2012	BONNEVILLE POWER ADMINISTRATION	1967	2012	19,003	19,003	.07160		19,003
	BONNEVILLE POWER ADMINISTRATION	1967	2012	4,566	4,566	.07160	R	4,566
	BONNEVILLE POWER ADMINISTRATION	1967	2012	14,300	14,300	.07160		14,300
	BONNEVILLE POWER ADMINISTRATION	1967	2012	3,436	3,436	.07160	R	3,436
	FISH, WILDLIFE & ENVIRONMENTAL	1997	2012	40,000	40,000	.06950		40,000
	BONNEVILLE POWER ADMINISTRATION	1970	2015	64,977	13,510	.07270		13,510
	BONNEVILLE POWER ADMINISTRATION	1974	2019	12,563	12,563	.07270		12,563
	BONNEVILLE POWER ADMINISTRATION	1974	2019	21,826	21,826	.07270	R	21,826
	BONNEVILLE POWER ADMINISTRATION	1974	2019	12,079	12,079	.07270		12,079
	BONNEVILLE POWER ADMINISTRATION	1974	2019	20,984	20,984	.07270	R	12,812
	TOTAL							154,095
2013	BONNEVILLE POWER ADMINISTRATION	1968	2013	41,070	41,070	.07200		41,070
	BONNEVILLE POWER ADMINISTRATION	1968	2013	8,076	8,076	.07200	R	8,076
	BONNEVILLE POWER ADMINISTRATION	1968	2013	23,202	23,202	.07200		23,202
	BONNEVILLE POWER ADMINISTRATION	1968	2013	4,562	4,562	.07200	R	4,562
	BONNEVILLE POWER ADMINISTRATION	1974	2019	20,984	8,172	.07270	R	8,172
	BONNEVILLE POWER ADMINISTRATION	1975	2020	21,916	21,916	.07250	R	21,916
	BONNEVILLE POWER ADMINISTRATION	1975	2020	17,158	17,158	.07250		17,158
	BONNEVILLE POWER ADMINISTRATION	1975	2020	32,026	32,026	.07250		29,791
	TOTAL							153,947
2014	BONNEVILLE POWER ADMINISTRATION	1969	2014	384	384	.07230		384
	BPA PROGRAM	1999	2014	60,000	60,000	.05900		60,000
	BONNEVILLE POWER ADMINISTRATION	1969	2014	205	205	.07230	R	205
	BONNEVILLE POWER ADMINISTRATION	1969	2014	42,237	42,237	.07230		42,237
	BONNEVILLE POWER ADMINISTRATION	1969	2014	22,537	22,537	.07230	R	22,537
	BONNEVILLE POWER ADMINISTRATION	1975	2020	32,026	2,235	.07250		2,235
	BONNEVILLE POWER ADMINISTRATION	1975	2020	11,742	11,742	.07250	R	11,742
	BONNEVILLE POWER ADMINISTRATION	1976	2021	61,025	61,025	.07230		14,361
	TOTAL							153,701
2015	FISH, WILDLIFE & ENVIRONMENTAL	2000	2015	19,603	19,603	.07240		19,603
	BONNEVILLE POWER ADMINISTRATION	1976	2021	61,025	46,664	.07230		46,664
	BONNEVILLE POWER ADMINISTRATION	1976	2021	2,212	2,212	.07230	R	2,212
	BONNEVILLE POWER ADMINISTRATION	1977	2022	4,981	4,981	.07210	R	4,981
	BONNEVILLE POWER ADMINISTRATION	1977	2022	33,702	33,702	.07210		33,702
	BONNEVILLE POWER ADMINISTRATION	1977	2022	5,380	5,380	.07210	R	5,380
	BONNEVILLE POWER ADMINISTRATION	1977	2022	3,948	3,948	.07210		3,948
	BPA PROGRAM	2001	2036	201,604	201,604	.07290		34,560
	TOTAL							151,050

2016	FISH, WILDLIFE & ENVIRONMENTAL	2001	2016	9,086	9,086	.06920		9,086
	BPA PROGRAM	2001	2036	201,604	167,044	.07290		137,092
	TOTAL							146,178
2017	FISH, WILDLIFE & ENVIRONMENTAL	2002	2017	9,047	9,047	.06690		9,047
	BPA PROGRAM	2001	2036	201,604	29,952	.07290		29,952
	BPA PROGRAM	2002	2037	233,185	233,185	.07080		106,377
	TOTAL							145,376
2018	FISH, WILDLIFE & ENVIRONMENTAL	2003	2018	9,274	9,274	.06500		9,274
	BPA PROGRAM	2002	2037	233,185	126,808	.07080		126,808
	BPA PROGRAM	1994	2034	50,000	50,000	.07050		8,178
	TOTAL							144,260
2019	BPA PROGRAM	1994	2034	50,000	41,822	.07050		41,822
	BPA PROGRAM	1993	2033	110,000	110,000	.06950		102,122
	TOTAL							143,944
2020	BPA PROGRAM	1993	2033	110,000	7,878	.06950		7,878
	BPA PROGRAM	2004	2049	137,969	137,969	.06890	R	131,526
	TOTAL							139,404
2021	BPA PROGRAM	2004	2049	137,969	6,443	.06890	R	6,443
	BPA PROGRAM	2005	2050	141,467	141,467	.06890	R	130,206
	TOTAL							136,649
2022	BPA PROGRAM	2005	2050	141,467	11,261	.06890	R	11,261
	BPA PROGRAM	2006	2051	144,854	144,854	.06890	R	122,457
	TOTAL							133,718
2023	BPA PROGRAM	1998	2023	106,600	106,600	.05850		106,600
	BPA PROGRAM	2006	2051	144,854	22,397	.06890	R	22,397
	BPA PROGRAM	2007	2052	148,057	148,057	.06890	R	6,002
	TOTAL							134,999
2024	BPA PROGRAM	2007	2052	148,057	142,055	.06890	R	126,225
	TOTAL							126,225
2025	BPA PROGRAM	2007	2052	148,057	15,830	.06890	R	15,830
	BPA PROGRAM	2008	2053	150,933	150,933	.06890	R	106,396
	TOTAL							122,226
2026	BPA PROGRAM	2008	2053	150,933	44,537	.06890	R	44,537
	BPA PROGRAM	2009	2054	153,462	153,462	.06890	R	73,329
	TOTAL							117,866

2027	BPA PROGRAM	2009	2054	153,462	80,133	.06890	R	65,045
	BPA PROGRAM	1998	2028	50,000	50,000	.06650		50,000
	TOTAL							115,045
2028	BPA PROGRAM	1998	2028	112,400	112,400	.05850		112,400
	BPA PROGRAM	2009	2054	153,462	15,088	.06890	R	5
	TOTAL							112,405
2029	BPA PROGRAM	2009	2054	153,462	15,083	.06890	R	15,083
	BPA PROGRAM	2010	2055	155,555	155,555	.06890	R	86,497
	TOTAL							101,580
2030	BPA PROGRAM	2010	2055	155,555	69,058	.06890	R	63,762
	BPA PROGRAM	2003	2038	239,131	239,131	.06890		32,394
	TOTAL							96,156
2031	BPA PROGRAM	2010	2055	155,555	5,296	.06890	R	42
	BPA PROGRAM	2003	2038	239,131	206,737	.06890		50,302
	BPA PROGRAM	1994	2034	50,000	50,000	.06850		22,330
	BPA PROGRAM	1998	2032	98,900	98,900	.06700		18,592
	TOTAL							91,266
2032	BPA PROGRAM	1998	2032	98,900	80,308	.06700		80,308
	BPA PROGRAM	2010	2055	155,555	5,254	.06890	R	4,149
	TOTAL							84,457
2033	BPA PROGRAM	2010	2055	155,555	1,105	.06890	R	1,105
	BPA PROGRAM	2011	2056	157,500	157,500	.06890	R	2,643
	BPA PROGRAM	1994	2034	50,000	27,670	.06850		27,670
	BPA PROGRAM	1994	2034	108,400	108,400	.06850		44,710
	TOTAL							76,128
2034	BPA PROGRAM	1994	2034	108,400	63,690	.06850		63,690
	BPA PROGRAM	2011	2056	157,500	154,857	.06890	R	3,759
	TOTAL							67,449
2035	BPA PROGRAM	2011	2056	157,500	151,098	.06890	R	2,572
	BPA PROGRAM	2003	2038	239,131	156,435	.06890		55,063
	TOTAL							57,635
2036	BPA PROGRAM	2011	2056	157,500	148,526	.06890	R	2,608
	BPA PROGRAM	2003	2038	239,131	101,372	.06890		44,864
	TOTAL							47,472
2037	BPA PROGRAM	2011	2056	157,500	145,918	.06890	R	2,640
	BPA PROGRAM	2003	2038	239,131	56,508	.06890		33,809
	TOTAL							36,449

2038	BPA PROGRAM	2003	2038	239,131	22,699	.06890		22,699
	BPA PROGRAM	2011	2056	157,500	143,278	.06890	R	1,836
	TOTAL							24,535